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Telegrams—LANCET, WESTRAND LONDON. *Telephone*—GERRARD 4314 & 4315. *Offices*—423, Strand, London, W.C

No. XIV. OF VOL. II., 1927. **No. 5431. Vol. CCXIII.**

LONDON, SATURDAY, OCTOBER 1, 1927

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An Address
ON THE
EARLY SYMPTOMS OF DISEASE, WITH SPECIAL REFERENCE TO THE EYE.

Delivered at the Opening of a Post-graduate Course at the James Mackenzie Institute for Clinical Research, St. Andrews,

BY A. MAITLAND RAMSAY, M.D., LL.D., F.R.F.P.S. GLASG.,
HON. DIRECTOR OF THE INSTITUTE; CONSULTANT OPHTHALMIC SURGEON TO THE ROYAL INFIRMARY, GLASGOW.

THE laboratory has played such a predominating part in the undergraduate education of the doctor of the present day that there is a danger that he has been taught to rely too much on instruments of precision and bacteriological and biochemical equipment. An exaggerated importance has come to be attached to all means of that kind, and a subordinate position has been given to the information gained by careful observation of symptoms and by a wise consideration of the general condition of the patient. Nature is constantly performing experiments in the laboratory of the human body, and although the results of such experiments are far too delicate to be measured by test-tube or balance, they are always revealed by the occurrence of symptoms. In order to learn how to interpret symptoms, the mind must be trained to become familiar with the natural history of disease. It is not possible to offer a prognosis from a series of barren facts. It is necessary that a general truth be extracted from the observation of a multitude of isolated symptoms, which must be interpreted before their meaning can be understood.

SYMPTOMS: THEIR CAUSATION AND SIGNIFICANCE.

The causation and significance of symptoms must be explained, in the first instance, by the physiologist, but he must work in close collaboration with the clinician, because many of the truths he endeavours to teach can be demonstrated more clearly at the bedside than in the laboratory.[1] A hypothesis based on clinical evidence may be proved to be wrong, but if it has served as a guide it may, in the long run, lead to important results, and pave the way to the discovery of true facts. Much purely laboratory investigation has failed for want of clinical direction.

Symptoms present a new interest when an objective cause is discovered to explain their occurrence. In the great majority of cases the earliest symptoms of disease are produced by reflex action, which in all probability takes its origin primarily in the capillary system.[2] The rôle played by the capillaries is distinct from that of the heart and blood-vessels.[3] The capillaries are not simply tubes through which blood flows. The capillary wall is in all probability formed out of the tissue in which it lies, and is not merely an attenuated extension of the vascular system. The cells of an organ have a direct influence upon the capillaries, and much depends upon the manner in which they react to the call of the tissues for nourishment—to the "hunger" of the tissues, as the late Clifford Allbutt used to say. The capillaries are, however, very susceptible to every morbid influence. They are at once distended by blood vitiated by bacterial or biochemical toxins.[4] Such a change in the capillaries can be proved by experiment, as, for example, when a toxic substance is injected intravenously in a living animal. The congested state of the capillaries causes slowing of the circulation, which is always accompanied by impairment of the function of the organ concerned. It may be stated as an axiom that the distribution of capillaries is always greater in proportion to the functional activity of the tissue in which they lie, consequently the functional activity of every organ of the body depends upon the rate at which blood circulates through its capillaries. Take the kidney in general toxæmia, for example. The toxins in the blood cause great dilatation of the capillaries of the glomeruli, and in proportion to the slowing down of the local circulation the excretion of urine diminishes until it may be wholly suppressed. When therapeutic measures are taken to speed up the circulation in the glomeruli, the output of urine increases immediately and diuresis continues until the reaction of the uriniferous tubules to their capillary supply is restored to the normal condition.

What can be easily demonstrated by experiment in the kidney can be seen in the eye by means of the ophthalmoscope. The objective examination of every part of the eye has reached a degree of perfection which has no parallel in any other part of the body. A study of the living eye, therefore, enables an observer to see what is going on, and as the basis of all vital activity is either chemical or electrical, it is reasonable to assume that what occurs in the eye will, under like conditions, also occur in other parts of the body where the phenomena are hidden from view. There is a unification of physiological and pathological processes. As disease is simply a perversion of natural processes, symptoms of disturbance of function must inevitably precede any signs of damage to structure sufficiently gross to be detected by any instrument of precision or by chemical or electrical tests. It is a matter of common experience in the study of the eye that in certain cases subjective examination affords earlier and more accurate information than can be got by an ophthalmoscopic examination. In what follows I wish to draw attention to the value of the information that is to be got from a careful study of those symptoms associated with disorder of the visual function.

DISORDERED FUNCTION IN THE EYE.

From the point of view of general physiology the characteristic feature of vision is the reception of light by the retina.[5] The rods and cones must be regarded as the functioning unit of the eye in the same way as the muscle-fibre is the functioning unit in the heart and the glomerulus in the kidney. That is important, because the first step in the study of derangement of function of any organ is to determine its functioning unit, and of equal importance with the functioning unit itself is the study of its capillary supply. The unit together with its capillaries are the organ in miniature, and functional activity depends upon the manner in which these two constituents react upon one another. Whenever the capillaries of the choroid or of the retina are congested the light sense becomes impaired. The rods and cones are supplied by the blood-vessels of the choroid—the choriocapillaris—while the inner layers of the retina, including the ganglion-cells and the nerve-fibres, are nourished by the capillaries associated with the retinal blood-vessels. The feeblest light capable of causing sensation is known as the light minimum. It is always disturbed in diseases which interfere with the circulation in the choriocapillaris and thereby starve the rods and cones of the retina. If, on the other hand, the capillaries in association with the retinal blood-vessels are disturbed, the ganglion-cells and nerve-fibres suffer, and a greater contrast in illumination is necessary before a difference can be appreciated. The smallest increase in brilliancy of one of two lights is spoken of as light difference. Increase in light difference implies, therefore, that the conducting apparatus of vision—ganglion-cells and nerve-fibres—is affected, whereas increase in light minimum is the earliest symptom that the receiving apparatus of vision—layer of rods and cones—is at fault. It is true that the eye differs from other sensory organs in that there is not merely a threshold of sensibility, but also a variation in the threshold according to any change occurring in the surrounding illumination. That special function is spoken of as adaptation,[6] and the eye possesses a wide range of adaptation for light and darkness, corresponding to the daily variation in the intensity of the light. In fact, the human eye is capable of adapting itself to almost any degree of illumination; consequently,

results of the examination of the light sense will vary according to the conditions in which the test has been applied. Moreover, the tests for light minimum and light difference are not interchangeable, because, as has already been pointed out, each has its own special value and diagnostic significance. A study of the light sense, however, has more than an academic interest; it has a real clinical value. For laboratory investigations many different photometers have been devised, but for clinical examinations Percival's discs[7] and Young's threshold tests[8] are satisfactory and convenient. By their help the examiner can quickly discover increase either in light minimum or in light difference. An increase in light minimum denotes that there is a lesion in the layer of rods and cones or some insufficiency of the visual purple, and is always present in deep hæmorrhage in the retina, and in all inflammations either of the retina or of the choroid in which the rods and cones are implicated. Increase of the light difference, on the other hand, denotes that there is a lesion of the superficial layers of the retina. It is diagnostic of toxic amblyopia, or of inflammation or atrophy of the optic nerve. It often happens that an intelligent patient suffering from failing sight so describes the onset of his symptoms that the examiner at once gets a clue to the diagnosis. Let me give an instance:—

A sailor, who was suffering from advanced atrophy of both optic nerves, told me that the first thing that made him fear there was something wrong with his sight was the discovery that his companions on the watch were able to pick up land more quickly than he could, whereas he knew that formerly he was able to distinguish land a considerable time before anyone else on the ship. He was all the more impressed by this disability because, even when he was so far behind his fellows in distinguishing land, he could see a light at night as well as ever, and frequently before the officer and the others on the watch. In this case it was obviously an increase in light difference that was the first symptom of disease, and its prompt recognition might have enabled a diagnosis to have been made, and appropriate treatment to have been begun, while yet there was a chance of cure, instead of waiting until the pathognomonic ophthalmoscopic changes of optic atrophy had become visible. By that time the disease had reached a stage when cure was impossible, the fibres of the optic nerve having become atrophied as a result of the obliteration of their capillaries.

An increase in light minimum is usually accompanied by colour-blindness for blue, small dark blue objects, for example cornflowers growing in a field, are not seen to be blue but appear to be quite black. I will give an example of this:—

A milliner consulted me because she thought her sight was failing rapidly. There was, however, no diminution in the visual acuity when tested with the ordinary types, but she said that although she was able to see fairly well in a bright light, she was sure that she was having more difficulty than formerly in seeing to work in the evening or by artificial light. Moreover, she always considered that her colour sense was perfect, but of late she had been making serious mistakes over shades of blue, and when tested it was discovered that, whereas she had no difficulty in distinguishing red or green, there was a definite central scotoma for blue. The eyes were irritable, the pupils contracted, and the fundus oculi congested. In this case the discovery of the increase of light minimum and the colour-blindness for blue were the most important factors in diagnosis. Both are well-recognised symptoms of congestion of the choriocapillaris, and treatment prescribed with the object of reducing that congestion restored sight to normal in less than a month.

GLAUCOMA.

The chief interest in such a case arises from the fact that increase in light minimum is the earliest symptom of glaucoma. The patient usually has to change his reading spectacles repeatedly at very short intervals. He may say also that now and again he suffers from attacks of transient loss of vision, and that more or less constantly he sees coloured halos like a rainbow round gas, lamp, or candle flame. Such symptoms are almost certainly premonitory of glaucoma. The patient probably mentions them casually, but if they be appraised at their proper value means will at once be taken to check the disease before increase in intraocular tension has become permanently established. It is only after the optic nerve becomes injured by increase in intraocular pressure that the light difference becomes affected. That observation has an important bearing on the pathogenesis and the treatment of the disease. It proves the existence of a morbid process affecting the choriocapillaris prior to the occurrence of blocking of the filtration spaces at the corneo-iridic angle. At the onset of glaucoma it is very unlikely that an eye can be examined microscopically, hence the importance of the symptom. It is only after the disease is thoroughly established that an eye may have to be enucleated. In such circumstances the most painstaking laboratory examination can only reveal end-results. It can throw no light on the beginnings of the disease. Moreover, although decompression operations by reducing intraocular tension can in many instances stay the progress of the disease, yet, as they do not remove the cause, they cannot be regarded as a cure for glaucoma. In some cases, as is well known, the disease continues to advance in spite of the best surgical skill, and in the great majority appropriate constitutional treatment is necessary both before and after operation.

Difficulty in seeing in a dim light may be a patient's chief complaint. He says that he suffers no inconvenience in ordinary daylight, but as soon as twilight sets in he sees so badly that to all intents and purposes he is blind. This form of night blindness is a sure indication that pathological changes are in progress in the bacillary layer of the retina accompanied by failure in the regeneration of the visual purple. That is to say, that the constructive metabolism of visual purple cannot keep pace with its consumption. The sympton is pathognomonic of that form of degeneration of the retina known as retinitis pigmentosa, which, in its typical form, gives such a characteristic picture on ophthalmoscopic examination. In some cases of night blindness, however, the ophthalmoscope reveals nothing abnormal, and in these circumstances the recognition of the symptom is of the greatest value. The disease may be hereditary and congenital, and is often discovered accidentally. The parents never suspect that their child's sight is affected until they notice that if it be out of doors after sunset it becomes so blind and helpless that it may have to be carried home. Night blindness sometimes occurs in adults as a result of malnutrition, over-fatigue, or dazzling of the eyes from exposure to bright sunlight. Many such cases were seen among the soldiers engaged in the Great War. Diet may be ample in quantity, but if it be deficient in essential vitamins sight is rapidly and seriously affected.

ABNORMALITIES OF VISION.

There is another group of cases in which the patients see best in a dull light and in which an outstanding symptom is an increase in light difference. Let me give an example.

A patient, usually from 40 to 60 years of age, may say that for a considerable period his sight has been misty—so much so, indeed, that he has for several weeks experienced difficulty in reading ordinary type, and that during the past few days it has suddenly become so much worse that he is quite unable to read or write. He may also complain that he cannot even recognise friends when he meets them in the street, and may add that he is shocked at the appearance of his friends; they look so ill and "corpse-like," all healthy colour being absent from their face. He also may say that he sees best in a dull light; that in bright light he is easily dazzled; a whitish or yellowish mist rises like a cloud in front of the eyes and prevents him from seeing clearly. Towards sunset, however, this sense of dazzling disappears, and in consequence he can always see best in the evening. He may also complain spontaneously that his colour sense is disordered, and testing will show that while he has no difficulty in distinguishing red and green in the peripheral parts of the field of vision, he is unable to perceive these colours in the central area. Red appears brown and green appears white. As the

disease progresses those colours assume a metallic lustre, red is said to "glitter like gold" and green to appear "like silver." In some cases blue is a strikingly predominant colour—a bunch of sweet peas is thought to be made up of blooms of different shades of blue. I remember an artist whose sight was beginning to fail. He had been famous for the brilliant colouring of his pictures, but at this period his friends could not understand how it was that the reds and the greens were completely overshadowed by a predominance of blue in everything he painted. It is interesting that this peculiar colour defect is very often associated with the presence of oxalate of lime crystals in the urine—one of the most reliable signs of disordered metabolism.[9]

The defect is in the centre of the field of vision, and any object in the line of fixation is a blank, but the patient cannot be said to be blind, because he can see on all sides of the centre of the visual field. Such a blank is called a scotoma, and as the patient is not conscious of anything intervening between him and the object looked at it is said to be negative. When, on the other hand, the scotoma is positive, the patient complains that a black spot covers every object he looks at directly, and if he gazes at the sky or a white wall, he sees a dark patch straight in front of him. This distinction between a negative and a positive scotoma is of considerable clinical value, because the former always implies a lesion of the nervous system, whereas the latter indicates that the retinal elements subjacent to the lesion are intact. If, for example, a patient on awakening from sleep discovers that he sees imperfectly with one eye, and a negative scotoma is discovered, he is suffering from a lesion of the optic nerve; whereas if a positive scotoma be present, the lesion must be situated in front of an intact layer of rods and cones, and is in all probability a hæmorrhage. The patient sees the blood-clot in his own eye.

Defect of sight in these circumstances at once suggests that the trouble is due to excessive indulgence in tobacco or alcohol, or both; and careful examination will in most instances confirm that opinion. A central negative scotoma, however, is not always pathognomonic of toxic amblyopia, for a similar blank in the centre of the field of vision occurs in disseminated sclerosis, in hereditary optic atrophy, and in inflammation of the air sinuses adjacent to the orbit when there is pressure on the optic nerve in the neighbourhood of the optic foramen. In those conditions, however, one eye only is implicated or one eye is affected much in advance of the other, and the more serious cases are accompanied by a pronounced feeling of exhaustion, while in toxic amblyopia the dimness of vision is, as a rule, equally pronounced in both eyes, and the patients are usually strong and healthy. In every case the diagnosis must be made from a careful examination of symptoms rather than from any characteristic ophthalmoscopic appearances. Indeed, in toxic amblyopia the contrast between the gravity of the symptoms and the absence of any distinctive lesion that can be discovered with the ophthalmoscope is one of the most striking features.

OTHER DEFECTS IN PERCEPTION.

Occasionally a patient complains that every object looked at is altered in size, or is thrown out of proportion and twisted. This symptom is known as metamorphopsia, and is often of very serious import. The distortion may, of course, be due to errors in the optical construction of the eye, but is much more likely to be induced by pathological changes in the retina itself, and is then significant of grave disorder of vision and usually means inflammation of the choroid. In this case it is caused by some change in the relative position of the rods and cones, and is most serious when the macular region is implicated. In some instances, where the percipient elements of the retina are separated by exudation, objects appear too small (micropsia); in others, where the percipient elements are crowded together owing to cicatricial alterations, they seem too large (macropsia); and in still others they assume very irregular shapes. It is sometimes difficult to detect with the ophthalmoscope the changes that give rise to the metamorphopsia, hence the value of the symptom in leading to a correct diagnosis.

That is in marked contrast to the condition in which symptoms are due to a change in the refractive media, the functioning unit remaining intact. It is very significant when a patient who has required to wear glasses for reading finds that he sees better without them. He is generally much pleased at the discovery, and says he has got his "second sight." If, however, his vision be tested, it will be found that he is now myopic, and requires concave glasses to enable him to see in the distance. Very probably he may say also that when he looks at the moon it appears doubled or quadrupled—monocular polyopia. Such a combination of symptoms is certainly due to changes taking place in the lens, and is in most instances premonitory of cataract. It is very important that the disease be recognised at such an early stage, because this allows of careful ophthalmoscopic examination of the fundus, and the detection of any pathological changes in the choroid or retina, at a time when the lens is still sufficiently transparent to permit these structures to be seen. Transient changes in refraction, whether in the direction of myopia or hypermetropia or an unusually early onset of presbyopia, should never be passed over without careful consideration. In such circumstances, in addition to the use of the ophthalmoscope, the urine ought always to be examined, because that derangement of the visual function may lead to the early diagnosis of glycosuria.[10]

Patients frequently complain of muscæ volitantes, but though these often give rise to much annoyance they do not indicate the existence of organic disease unless floating bodies be seen on ophthalmoscopic examination. They point, at the most, to a condition of retinal hyperæsthesia, determined, in all likelihood, by prolonged application of the eyes to close work. In these circumstances the refraction ought to be carefully tested, the urine examined for oxalate of lime or uric acid crystals, and the patient discouraged from looking for the muscæ, as these are only too prone to reappear whenever attention is directed to them. It is, however, sometimes not easy to draw the line between what may be regarded as physiological and what is pathological. A careful ophthalmoscopic examination is therefore necessary in every case, more especially if the patient be short-sighted, for in these circumstances opacities in the lens, or floating bodies, or hæmorrhages, may be detected in the vitreous humour, and be premonitory of detachment of the retina. In simple myopia there is no disturbance of the light sense, consequently if in an individual case increase in light minimum be detected it is evidence of some interference with the nutrition of the bacillary layer of the retina and adds to the gravity of the prognosis, even in cases in which the ophthalmoscope reveals no structural damage in the fundus. Sparks and flashes of light are often due to disturbance of the circulation in the retina or choroid, and in many instances they are the first symptoms of disease. In inflammation of the choroid the sensation of dazzling may be very pronounced, and be accompanied by flashes of light of various colours. At other times complaint is made of constant showers of golden dust, or of large numbers of black specks floating in front of the eyes, of stationary spots of larger size, or of a veil which seems to hang in front of the line of vision. In those circumstances it is the least refracted end of the spectrum that causes most trouble, and the patient experiences great relief by wearing peacock-blue glasses which cut off the red rays.

THE STUDY OF SYMPTOMS.

It is often said that a straw shows the direction from which the wind is blowing, but if the observer is not sure of his own orientation he learns nothing

from watching the movements of the straw until he consults a compass. Accurate knowledge of clinical physiology is the physician's compass, and if he can read it correctly he will never go far astray. A complaint of discomfort is usually all that is revealed of the beginnings of disease. In the case of the eye these subjective sensations are referred to the organ itself, but in the majority of instances—for example, those associated with the heart or the kidney[10]—they are referred to some other part of the body. Such symptoms are usually slight and transient and on that account are easily overlooked and forgotten, but when properly interpreted they convey much information at a time when to possess it redounds not only to the benefit of the patient, but also to the credit of the physician. The illustrations I have given have been drawn from ophthalmology, because my own clinical experience has been gained by a study of diseases of the eye. It is, however, essential to bridge over the gap between narrow specialism and general medicine, because no progress can be made until it is recognised that the principles of general physiology are sufficiently broad and deep to include every organ of the body. To emphasise specialism is a retrograde step. It is always the same physiological and pathological processes that are at work. Peculiarities of anatomical structure are the cause of many of the signs and symptoms in different organs, and complicate a problem, which becomes greatly simplified when attention is focused upon the individual functioning unit and its capillaries. The study of symptoms, which I have tried to prove to be of pre-eminent assistance in connexion with the eye, is of equal value in the study of disorder in other organs of the body. Many family doctors, blessed with a retentive memory well stored with the results of a long clinical experience, possess a marvellous knowledge of the symptomatology of disease, but such knowledge, as a rule, dies with its possessor. It has not been formulated in such a way that others can make use of it after he dies. It ought, however, to be the bounden duty of every general practitioner not only to learn for himself, but also to add something to the general store of medical information. The Clinical Institute has been founded in order to try to remedy this defect, and one of its most important functions is not only to observe, record, and classify symptoms, but also to determine their true physiological foundation in order that their mechanism may be explained and their prognostic value properly assessed. Far from being in conflict with knowledge gleaned from other sources, symptomatology ought to supplement that knowledge and throw fresh light on many physiological and pathological problems. Failures at the bedside may often worry and disappoint the clinician and tempt him to appeal to the laboratory worker for a speedy solution of his difficulties. The laboratory, however, can give no short cut to diagnosis; laboratory methods and clinical methods must be studied side by side.

REFERENCES.

1. Moynihan, Berkeley: THE LANCET, 1927, i., 373.
2. Bryson, L. H.: Reports of the St. Andrews (James Mackenzie) Clinical Institute, 1926, iii., 35.
3. Krogh, A.: Anatomy and Physiology of the Capillaries, 1924.
4. Dale, H. H.: Brit. Med. Jour., 1923, i., 959.
5. Ramsay, Maitland: Glasg. Med. Jour., November, 1925.
6. Lohmann, W.: Disturbances of the Visual Function, 1913.
7. Percival, A. S.: Transactions of the Ophthalmological Society of the U.K., 1920, xl., 311.
8. Young, G.: Brit. Jour. Ophthal., 1918, ii., 384.
9. Ramsay, Maitland: Diathesis and Ocular Diseases, 1909.
10. Duke-Elder, W. S.: Brit. Jour. Ophthal., 1925, ix., 167.
11. Mackenzie, Sir James: Symptoms and Their Interpretation, 1918.

EXTENSIONS AT HEREFORD HOSPITAL.—A special meeting attended by over 100 governors of the Herefordshire General Hospital was held recently to consider proposals of the Board of Management to carry out extensive building operations and extensions so as to increase the accommodation to 160 beds and provide maternity and other wards, a private nursing home, and administration offices. The estimated cost is £72,000, and the motion approving of the scheme for 160 beds was carried only by a narrow majority.

A CASE OF
JUVENILE GENERAL PARALYSIS
SUCCESSFULLY TREATED BY MALARIA AND INTRAVENOUS AND INTRATHECAL INJECTIONS.

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UNTIL the introduction of the malarial treatment of general paralysis by J. Wagner-Jauregg, the prognosis of this disease was hopeless, and the patients, after an illness of variable duration, during which one or more remissions might occur, inevitably succumbed. Combined treatment by malaria and antisyphilitic remedies has improved the outlook so much that we do not now regard the disease as incurable, and many patients have been restored to a life of usefulness. It is too early to say definitely whether they have been permanently cured, but I have one patient, whom I treated in conjunction with Sir James Purves-Stewart by the method advocated by him,[1] who has been clinically well for two and a half years. His blood and spinal fluid have been serologically negative for two years, after having been very strongly Wassermann-positive, with the spinal fluid typically paretic in other respects.

Hitherto all records of successful treatment of general paralysis in the literature have referred to adults, and, so far as I can ascertain, there is no recorded case of juvenile general paralysis having been successfully treated either by malaria or by any other means. It is of interest, therefore, to put on record this case of general paralysis in a child who was admitted to hospital apparently a hopeless lunatic and who has recently been discharged to a convalescent home apparently healthy. At the risk of being thought prolix, I have deemed it advisable to go somewhat minutely into the details of the clinical condition and of the treatment employed. My reasons are, first, that the case is historically interesting, because it is the first of its kind to be put on record; secondly, that I have already received requests from several medical superintendents of mental institutions asking me for details of the malarial and other lines of treatment adopted; and thirdly, that it illustrates how prolonged the treatment may have to be before any obvious improvement can be detected in the patient's condition.

History of the Case.

The history of the case is as follows:—

A girl, aged 6 years, was admitted to the Hospital for Sick Children, Great Ormond-street, on July 30th, 1925, under the care of Dr. Robert Hutchison, suffering from "mental disorder." The account as given by the parents was that the child was quite well and mentally normal up to three weeks before admission. She was late in coming home from school one evening, having apparently lost her way and taken five hours over a ten-minute walk. Afterwards her behaviour was strange. She cried and moaned for no apparent reason, she was troublesome and indeed became so naughty that the authorities would not keep her at school. She seemed dazed and made senseless remarks; she could not remember words, but her articulation is said to have been normal. She complained of headaches, but there was no trouble with vision or any other sense organ. Although it would appear from the account given by the parents that the onset of the mental trouble was more or less sudden, the school mistress stated that already, when the patient first attended school in February, 1925—that is, about five months before admission to hospital—she showed signs of abnormal mentality. She was listless and apathetic, at times restless and inconsequent in her behaviour. On one occasion she is said to have had a "very unusual screaming fit" when she was brought into school, and towards the end of her stay at the school she took to slapping the other children. The mistress further adds that sometimes she could not give an answer to a question but just repeated the question itself, and she also mentions that the

[1] Brit. Med. Jour., 1924, i., 508.

child was unable to concentrate. There was very little to note in the earlier history; there were no infantile symptoms of syphilis, and according to the mother's account the child was very bright mentally and was able to go on errands for her and bring back the correct change.

Family History.—The parents were married in 1917. There is a history of one miscarriage at three months before the birth of the patient, and another, also at three months, in 1925. The father gives no syphilitic history, and his Wassermann in 1925 was quite negative. The mother likewise gives no syphilitic history, and her Wassermann in 1925 was practically negative (1, 0, 0, 0). Her Kahn test, however, was strongly positive.

Condition on Admission.

The child was physically well-nourished and healthy looking, but was sullen and quiet, and appeared to be unable to understand what was said to her. She was very dirty in her habits. About a week after admission she became very noisy and destructive and had attacks of violent temper, during which she tore up all her bed-clothes, in spite of the fact that she was strapped in her cot with fairly strong webbing and that her hands were encased in stockinged gloves. In one week she managed to tear up four sheets, two blankets, and two counterpanes, and broke four plates and three mugs.

Her speech was very indistinct, and on account of her mental condition she was extremely difficult to examine. The heart and lungs appeared normal; it was impossible to make any adequate examination of her central nervous system, as she was so resistant and demented. Vision appeared to be normal, and the pupils reacted to light and accommodation, but I may mention here that while the patient was under an anæsthetic on one occasion the fundus of the eyes was examined and typical syphilitic choroido-retinitis found to be present. There was no nystagmus. The knee-jerk and abdominal reflexes were present and the plantar reflex was flexor. Mentally the child was like an adult general paralytic—at times smiling fatuously and making meaningless noises, at other times crying and turning away from anyone near her and resisting any examination. She appeared to be suffering from headache, as she frequently put her hands up to her head and screamed. She was unable to feed herself, and although she improved slightly under the ward discipline, she was never taught to be clean and was always very noisy.

The day after admission the blood Wassermann was very strongly positive, and the case was diagnosed as probably one of juvenile general paralysis; this diagnosis was confirmed by the investigation of the cerebro-spinal fluid which was made on August 10th, with the result shown in the table. The Wassermann reaction was strongly positive, the colloidal gold curve and the other changes in the spinal fluid typical of G.P.I. I accordingly suggested to Dr. Hutchison that we might try treating the patient by cistern puncture and the injection of salvarsanised serum. From the summary of the treatment which is given later it will be seen that the first course of cisternal injections was given between August 18th and Nov. 4th, 1925. For this purpose 0·2 g. of novarsenobillon was given intravenously, and half to one hour later the patient was bled to the extent of 20–25 c.cm. The blood was allowed to clot, kept in the ice-chest overnight, and on the following day the serum was removed aseptically and diluted with an equal volume of sterile saline. Under a general anæsthetic cisternal puncture was performed, about 20–25 c.cm. of cerebro-spinal fluid were removed, and an equivalent amount of the diluted salvarsanised serum allowed to run into the cisterna magna. The child received during this course six such injections into the cistern at fortnightly intervals, and during the intermediate weeks she received an intravenous injection of 0·15 g. N.A.B. The child's mental condition certainly showed some improvement during this course of treatment, and reference to the table will show that there was a definite but slight improvement in the cerebro-spinal fluid. This course of cisternal injections with salvarsanised serum was followed up with a course of ten intramuscular bismostab injections given bi-weekly, starting with 0·3 c.cm. and working up to 1 c.cm.; total 7·3 c.cm. At the end of this course the blood Wassermann was still very strongly positive, but the cerebro-spinal fluid showed definite improvement (see table, Dec. 15th–16th, 1925). Mentally, however, the child was in much the same condition. She made inane remarks, repeated all that was said to her, and was still very destructive. She was discharged from hospital for the first time on Jan. 1st, 1926. The mother brought her up for a blood test on Feb. 1st, 1926, when she reported that the patient was much more sensible and talked intelligibly. On March 8th, 1926, the child was in the same condition. Protoiodide of mercury, gr. ¼ t.d.s., was ordered.

Malarial Treatment.

Later, as the child was apparently not improving very much, it was decided to try the malarial treatment upon her. She was accordingly admitted again to hospital on April 23rd, 1926. The blood and spinal fluid were tested on the 26th, and on the 28th mosquitoes were applied and about eight of them fed on the patient. There were irregular rises of temperature from about the thirteenth day after the mosquitoes fed, but owing to the child's wild condition it was extremely difficult to take her temperature. Parasites were found in the blood on the 16th day, 20th day, and 22nd day after infection. Apparently the child had only three definite rigors, and the highest temperature recorded was 105° on one occasion and 105·6° on another. The spleen was felt to be enlarged on the 19th day after infection. As the patient was becoming rather anæmic, it was decided to stop the malarial infections on May 22nd, and to this end the patient was given euquinine, 2 gr., three times a day for five days. Parasites were found in the blood two days afterwards, but not on May 25th or 27th, and she had no more rises of temperature after the quinine was administered.

The patient having recovered from the anæmia caused by the malaria, she was discharged from hospital on June 7th, 1926, in the hope that she would gradually show signs of having received benefit from the malarial treatment. Unfortunately this did not prove to be the case, for the mother reports that during the month after her discharge from hospital the child appeared to be worse rather than better. She was quite unmanageable, threw everything about she could lay her hands on, including cups of tea and anything on the table. She screamed and made so much noise that, in the words of her mother, "it was almost impossible to live with her." Things came to such a pass that the parents were threatened with ejectment from their rooms, and the only advice the mother could get from the local medical authorities was to send the child to an asylum. As I was rather loth to lose sight of her I agreed to take her into hospital again. Her condition on admission to hospital for the third time is best given in the words of the staff nurse, as follows:—

"She resembled a wild animal. She screamed at intervals night and day, flung things about, tore up the bed-clothes and wearing apparel, and threw everything on the floor. She was very dirty in her habits. The resident medical officer, who visited the ward at a critical moment, remarked: 'If Dr. Nabarro thinks he is going to do anything with this child—— Impossible!' He thought she was terrible. Her language was choice and at times she was almost unapproachable. She was unable to feed herself, and if any food was given to her it was thrown on the floor."

Intracisternal Injections.

At this time she was given a mixture of potassium bromide with luminal gr. ¼ three times a day and paraldehyde at night when necessary. It was decided to give her another course of intracisternal injections, this time at intervals of one week only. These were given between July 13th and August 17th, 1926, and already after the second injection she appeared to be

more rational, quieter, and spoke in longer sentences than heretofore. Towards the end of August, when the course of injections was completed, she began to be more docile and was bathed with less difficulty. She gradually became cleaner in her habits and took her food nicely. So rapidly did she now improve that by the first week in September she was allowed to run about in the garden with the other children for an hour or two every afternoon. At the end of September she remembered things she had done at home, as, for instance, having had a game at ball with her father in the park, and the toys she played with. She remembered going to school and things the teacher had spoken about. She became interested in her surroundings and friendly in her manner, each day showing a gradual improvement. In spite of this great improvement in her general behaviour, she had sleepless nights, and it was necessary to continue the bromide and luminal three times a day and the paraldehyde at night. The former was discontinued on Oct. 3rd, 1926, the latter, however, had to be given until Jan. 25th, 1927. Between November, 1926, and February, 1927, she was given sunlight treatment, which she rather enjoyed, and which may possibly have done her some good during the sunless days we then experienced. As the blood Wassermann was still fairly strongly positive and the cerebro-spinal Wassermann also somewhat positive, it was decided to give further subsidiary treatment. On Sept. 7th, 1926, protoiodide of mercury pills, gr. ¼, were given twice a day, but these had very soon to be discontinued owing to the diarrhœa they caused. Between Sept. 13th and Oct. 18th she had 14 c.cm. of bistovol (bi-weekly intramuscular injections of about 1·5 c.cm.). The blood and fluid were tested thereafter (on Nov. 9th and 16th), when the former was found to be still strongly positive, the latter almost negative. As I was very anxious to get the blood Wassermann negative, if possible, I decided to give once a week an intravenous injection of 0·3 g. N.A.B. and an intramuscular injection of bismostab, 0·75 c.cm. These combined injections were given for four weeks, but as they appeared to produce toxic symptoms, such as vomiting and marked pallor, the N.A.B. was discontinued and the patient given the bismostab alone. When the blood was last examined, on March 3rd, 1927, it had improved somewhat but was still fairly strong. I decided now to change over to sulfarsenol intramuscularly, but an injection of 0·24 g. seemed to disagree with the patient, so alternatively she was given ten intramuscular injections of 1 to 1·5 c.cm. bistovol. These were completed on May 20th, 1927, shortly before the child left hospital. The details of the treatment given to the patient can best be seen from the summary which follows, and if this be compared with the table the effect of the treatment upon the condition of the blood and cerebro-spinal fluid at any particular date can be ascertained.

Summary of Treatment.

1925.—August 10th to Nov. 3rd, 13 intravenous injections novarsenobillon at weekly intervals—2·3 g.

August 18th to Nov. 4th, six cisternal injections, 21–26 c.cm., 50 per cent. salvarsanised serum and saline at fortnightly intervals.

Nov. 9th to Dec. 12th, ten intramuscular injections bismostab* bi-weekly. Total, 7·3 c.cm.

1926.—March 8th, protoiodide of mercury, gr. ¼, three times a day for six weeks.

April 28th, eight mosquitoes fed. May 13th, temperature 101° (15th day).

May 14th, parasites found.

Euquinine, gr. 2, three times a day from May 22nd for five days.

July 12th to August 16th, seven intravenous injections N.A.B. (weekly). Total, 2·1 g.

July 13th to August 17th, six weekly cisternal injections, 20–25 c.cm., 50 per cent. salvarsanised serum and saline.

* Bismostab is a preparation made by Boots Pure Drug Co., Ltd. It consists of 0·2 g. bismuth metal in each c.cm. of 5 per cent. glucose solution.

TABLE SHOWING RESULTS OF THE BLOOD AND C.S.F. INVESTIGATIONS.

Date.	Blood Wassermann.	Cerebro-spinal fluid.									
		Cistern or lumbar.	Wassermann.	Albumin per cent.	Globulin.	Cells per c.mm.	Colloidal gold (Lange).	Colloidal mastic.	Colloidal benzoin.	Sugar.	Remarks.
1925.											
July 31st..	4, 4	—	—	—	—	—	—	—	—	—	—
August 10th	4, 4, 4, 3	L	4, 4, 4, 4	0·035	<2	17	5554310000	—	—	+	—
August 18th	—	C	4, 4, 4, 4	0·04	<2	12	5555432110	—	—	+	—
Sept. 1st ..	—	C	4, 4, 4, 4	0·025	3	2	4555321000	5433100000	5554	+	—
Sept. 29th.	—	C	4, 4, 4, 3	0·03	trace	3	4533210000	3321000000	5531	+	—
Oct. 12th–13th	4, 4, 4, 4	C	4, 4, 4, <4	0·025	0	10	1232100000	2210000000	5444	+	Fluid slightly blood-stained.
Oct. 28th .	4, 4, 4, 4,	—	—	—	—	—	—	—	—	—	—
Nov.3rd–4th	4, 4, 4, 4	C	4, 4, 4, 1	0·02	0	1	3333210000	1210000000	5400	+	—
Dec. 15th–16th	4, 4, 4, 4	L	4, 4, 4 *	0·02	—	0	2333321000	—	—	+	—
1926.											
Feb. 1st ..	4, 4, 4, 4	—	—	—	—	—	—	—	—	—	—
March 26th	4, 4, 4, 4	L	4, 4, 3, *	0·02	† trace	3	2333210000	—	—	+	—
July 12th–13th	4, 4, 4, 1	C	4, 3, 2, 0	0·03	0	1	—	—	—	—	—
July 21st..	—	C	2, 0, 0, 0	0·025	0	3	1211000000	—	—	+	Chlorides 7·5 g. per litre.
Aug.3rd–4th	4, 4, 4, 4	C	3, *, *, 0	0·03	0	4	1211000000	—	—	+	Chlorides 7·6.
Aug. 9th–10th	3, 2, 1, 0	C	4, <2, 0, 0	0·04	trace	2	1210000000	—	—	—	Fluid blood-stained.
Aug. 16th–17th	4, 4, 3, *	C	4, 2, 0, 0	0·03	0	2	1112210000	—	—	+	Chlorides 7·8.
Nov. 9th..	4, 4, 3, *	—	—	—	—	—	—	—	—	—	—
Nov. 16th.	—	L	<2, 0, 0, 0	0·025	trace	1	1121000000	—	—	+	Kahn test doubtful.
1927.											
March 7th–8th .	4, 1, 0, 0	L	1, 0, 0, 0	0·03	0	1	1221100000	—	—	+	Kahn test negative.

In reporting on the blood Wassermann, when two figures only are given, it means that a dilution of serum 1 in 15 was employed with three and five minimal hæmolytic doses, or units, of complement respectively. When four figures are given, these refer to serum 1 in 15 and 1 in 30 dilutions, with three and five units of complement respectively. The figures themselves (4, 3, 2, 1, &c.) refer to the amount of hæmolysis which has taken place in the test-tube, 4 indicating a complete absence of hæmolysis (strong positive). 0 = complete hæmolysis, and 1, 2, 3 progressively diminishing amounts or degrees of hæmolysis. The sign < indicates that the reaction was not quite as strong as the figure before which it occurs. * means that the tube was not quite cleared and that there was not sufficient sediment to call the reaction (1). In the case of cerebro-spinal fluid, the numbers represent the same degree of hæmolysis as in the case of the blood-serum, but the amounts of fluid used are different. The four tubes contain respectively 2 vols., 1, ½, and ¼ vol. of cerebro-spinal fluid, giving 1 in 2, 1 in 3, 1 in 6, and 1 in 12 dilutions of the cerebro-spinal fluid, and to each tube is added 3 units of complement only.

Sept. 13th to Oct. 18th, ten intramuscular injections bistovol† (bi-weekly). Total, 14 c.cm.

Nov. 29th to Dec. 20th, weekly injections N.A.B., 0·3 g. (intravenous) and bismostab, 0·75 c.cm. (intramuscular). (Four given, then stopped on account of vomiting and pallor.)

Dec. 24th, 1926, to Feb. 11th, 1927, eight intramuscular injections bismostab, 0·75 c.cm. Total, 6 c.cm.

1927.—March 3rd. As the Wassermann was still positive (4, 1, 0, 0, Kahn P. P. P.), sulfarsenol, 0·24 g., was injected intramuscularly, but as patient was ill after it, resorted again to bistovol, 1–1·5 c.cm., in all 13 c.cm.

May 20th, she was successfully vaccinated prior to going to convalescent home.

Remarks.

While it is as yet too early to regard the patient as "cured," her mental and physical condition show such an amazing improvement and the serology of the blood and spinal fluid have progressed so far towards normality, that I have reported the case in order to encourage others who may have such cases under their care to try similar lines of treatment. An important point which this case brings out is the fact that after even a year's prolonged treatment by various methods the child's condition was apparently no better than it was when treatment was begun. It is, however, possible that if one had waited a few months longer after the cessation of the malarial treatment, an improvement in the patient's mental condition might have taken place, but as I have already stated, the alternative was between sending the child to an asylum or the ejectment of the parents from their home if no further active steps were to be taken. It may be asked why such a variety of drugs and so many different forms of treatment were tried, so that it is impossible to say definitely to which line of treatment is due the success which has been attained. This criticism is valid, but the main object was to see whether a case of juvenile general paralysis could be improved or cured by any means whatsoever. Now that this has been shown to be possible future cases may be treated by any one or more particular line or combination of treatment, in order to ascertain which gives the best results. There can be no doubt that the earlier the case comes under observation and the sooner treatment is started the better must be the outlook for the patient. This was another reason which prompted me not to wait too long for signs of improvement before trying another line of treatment. I may mention here that I have at present under observation two other cases of juvenile paralysis which have had malaria given to them and are now having the ordinary antisyphilitic treatment. It will be interesting to see if these cases do as well clinically and serologically, without the cisternal injections, as the child whose case is above described has done after her combined treatment. Malarial treatment is also being tried on a small number of children whose cerebro-spinal fluid is Wassermann-fast, but who have no symptoms or other signs of disease of the central nervous system.

Conclusion.

If, subsequently, it be found that the treatment of juvenile general paralysis cannot be materially simplified or shortened beyond that of the case herein reported, the question may legitimately be asked—and, indeed, has been asked—whether the expenditure of time and energy, thought and care involved, is really justified. The answer to this question depends entirely upon the future course of this and similarly treated cases. If my patient remains in substantially the same mental condition as she is at present and proves herself educable, as I have every reason for believing her to be, and if she grows up to healthy womanhood and has healthy children, then the answer to this question is unhesitatingly "Yes." Medical attention alone would not have achieved the success recorded, and the fullest recognition possible must be given to the sisters and nurses of the wards in which the patient was for so long an inmate.

† Bistovol is made by May and Baker and is the bismuth acetylamino-oxy-phenylarsinate of Levaditi.

In conclusion, I should like to put on record my thanks to my colleague, Dr. Robert Hutchison, for handing the patient over to my care for treatment; to my assistants, Dr. D. McClean and Dr. B. B. Sharp, for help in many ways and on many occasions during the injections and other manipulations, and in carrying out the pathological investigations; to Colonel S. P. James and his assistant, Mr. P. G. Shute, for help with the malarial infection; and to all others who contributed directly or indirectly to the success of the treatment; and in particular to my staff nurse, Miss Irving, and her assistants, whose infinite patience and great care and attention contributed in no small measure to the recovery of the patient.

CARBUNCLE OF THE KIDNEY,

WITH REPORT OF A CASE.

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CARBUNCLE of the kidney, though a rare and somewhat unfamiliar condition, occurs often enough to merit recognition as a distinct clinical entity. This, as I hope to point out, is all the more important since the prognosis is generally very good when an early diagnosis is made and active treatment instituted, whereas failure to recognise the condition may lead to disastrous results. It may be described as a hæmatogenous infection of the interstitial tissue of the kidney producing a localised and circumscribed zone of multiple suppurating foci, leaving the remaining renal substance unaffected. There is always a primary focus, as a rule a furuncle of the skin. Israel [1] was the first to observe the condition in 1890, in a case a full account of which was given in 1901 in his classical "Klinik der Nierenkrankheiten." The first complete account was given in 1920 by Barth,[2] who described five cases and pointed out many of the diagnostic and pathological features. Since then many cases have been added to the literature.

The following case is described here since it represents a fairly characteristic clinical picture and illustrates many of the pathological features.

A Case Related.

The patient, a married women, aged 52, developed a bad carbuncle of the neck during January, 1926. This was incised, the pus evacuated, and a steady recovery ensued. Whilst convalescing she took a sea voyage, during which, at the end of the first week in February, 1926, she knocked her left loin rather severely against a bunk. Ten days later she was taken ill with severe pain in the left side, high temperature, and general malaise. There were no urinary symptoms. A diagnosis of influenza and pleurisy was made, and the patient was landed and brought back to England. The patient continued to run an irregular temperature and complain of intense pain in the left side of the abdomen and loin, and her general condition became worse. There were occasional rigors.

The patient was examined on March 5th, 1926, when the temperature was 101° F, the pulse-rate 96 per minute, and respiration-rate 20. On the back of the neck was a large scar of a recent carbuncle. The anterior abdominal wall and the muscles of the back on the left side were rigid, and there was great tenderness on palpation. Deep in the left loin an ill-defined tender swelling could be felt. No other abnormal physical signs were detected. A radiogram of the renal tract showed a normal kidney shadow on the right side, and an ill-defined shadow in the left loin, which looked like an enlarged kidney. The urine revealed nothing abnormal on analysis. Microscopically casts and leucocytes were absent.

The swelling rapidly increased in size, a diagnosis of perinephric abscess was made, and on March 8th, 1926, the left kidney was explored by Mr. Frank Kidd. A perinephric abscess was opened and drained, and on inspecting the kidney its lower pole was bulged by an ill-defined indurated swelling. Nephrectomy was performed and the wound drained. The pus from the abscess was found to contain *Staphylococcus aureus* in pure culture. During her convalescence a course of

injections of collosal manganese and staphylococcic vaccines were administered. A slow but uneventful recovery followed.

Ætiology.

Carbuncle of the kidney is a rare disease. Up to 1926 Smirnow [10] was able to collect 26, including his own and reported cases. Most of the patients were between 20 and 55 years of age. Barth [1] and Colmers [3] each recorded the condition in a girl aged 10 years,

FIG. 1.

Abscess cavity of a carbuncle in kidney injected with bismuth paste. (*Kindly lent by Mr. Frank Kidd.*)

and this would appear to be the earliest recorded age. The oldest case I can find in the literature is that published by Reschke [9] of a man aged 55 years. Men are more frequently affected than women. Of 33 cases collected from the English and German literature, including the one described above, 23 were males and 10 were females. The greater incidence in men may in part be accounted for by the greater exposure to trauma.

With few exceptions, the individuals affected are, except for a staphylococcal lesion of the skin from which they are usually recovering, otherwise healthy. The primary focus may be, and frequently is, a trivial lesion of the skin, such as a furuncle of the neck. This or a carbuncle of the neck is the source of the staphylococci in most cases. Various other primary lesions have, however, been recorded. Thus it has followed bone infection as in cases described by Souper [11] and Kreschner,[8] whitlow of finger (Fisher [5]), and prostatectomy as in Horn's [6] case. Trauma is not only an important predisposing factor, but also of considerable significance in determining the site of the lesion. A history of trauma was obtained in my case, and although not often mentioned in the literature may frequently occur in some trivial form easily forgotten by the patient. Its importance as a factor in lowering the resistance of the kidney will be referred to again.

Clinical Features.

The onset of symptoms with malaise and intermittent fever is usually gradual and insidious, and generally commences between two and eight weeks after the primary infection. Pain in the side is an early and constant feature. It begins in the loin or lower part of the chest behind, and steadily getting worse soon involves most of one side of the abdomen. The pain is felt as a constant dull ache, does not tend to radiate, and is generally made worse by movement or taking a deep breath. Rigors are frequent. Vomiting sometimes occurs, and in the case of large perinephric swellings there may be a dry cough.

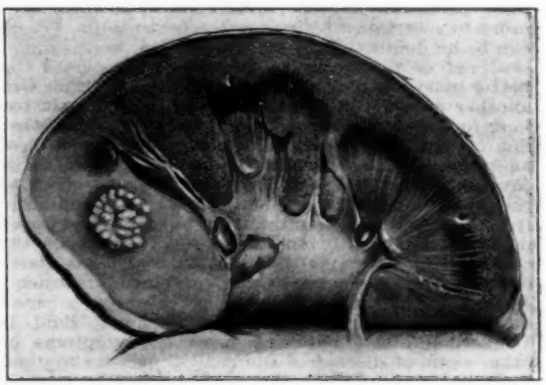
On examination, the respiratory movement of the lower part of the chest on the affected side is restricted and there is early rigidity of the muscles of the back and loin. Pressure aggravates the pain, and after a few days an ill-defined, extremely tender swelling may generally be felt deep in the loin. This may at times actually produce a bulging of the affected side. Urinary symptoms are usually conspicuously absent, but frequency and dysuria have on rare occasions been reported. The urine is generally normal, or a trace of albumin and a few leucocytes may be present, but catheter specimens are sterile. Blood-counts always show an obvious polymorphonuclear leucocytosis. The clinical picture is therefore that of a perinephric abscess.

Diagnosis.

The certain diagnosis of renal carbuncle can only be made at operation. The occurrence, however, of a pyrexial illness, accompanied by chills, pain, and swelling in the loins within a few weeks of a primary staphylococcal infection of the skin, particularly when there has been a history of a blow to one kidney region during the intervening time, should always lead one to suspect the possibility of this condition.

In the first few days of illness, the unexplained pyrexia may suggest an influenzal attack, or, where pain is an early feature, pleurisy or pneumonia may be suggested, particularly as cough and diminished movement over one pulmonary base may occur; but careful examination of the lungs will fail to reveal any other abnormal signs. A *Bacillus coli* pyelitis may be

FIG. 2.



Section of kidney showing area of multiple purulent foci at lower pole, surrounded by a broad zone of fibrous tissue. The renal pelvis is healthy. (*Drawn by W. Thornton Shiells.*)

simulated, but frequency of micturition and dysuria are not common; the urine is nearly always sterile and free from pus, and the usual alleviation of symptoms does not follow the administration of alkalies. Within a few days of onset a deep-seated swelling appears, which is generally recognised as a perinephric abscess. Psoas abscess, and on the right side appendix abscess, or even acute cholecystitis may all have to be excluded by a careful consideration of the history and physical examination. The presence of a primary suppurative lesion may suggest the possibility of secondary metastatic abscesses in the kidney. In this condition the urine always contains a considerable amount of albumin, pus, and organisms. Moreover, the renal function, as estimated by the rate of excretion of dyes, is not impaired in renal carbuncle, whereas gross impairment occurs in secondary metastatic abscesses

of the kidneys. These important distinguishing features were first pointed out by Barth.[1]

When at operation the perinephric abscess is drained, inspection of the kidney will generally reveal a swelling at one pole, with the point at which it has ruptured visible on the surface. If, after draining what is believed to be a simple perinephric abscess, the wound continues to discharge after a reasonable period of time has elapsed, the possibility that a carbuncle in the kidney has been overlooked should be suspected. In that case a subsequent exploration will be necessary. Considerable help may be obtained by injecting the sinus with bismuth paste or lipiodol, when the presence

FIG. 3.

Outer surface of kidney showing thickened and inflamed capsule, and at the lower pole a yellow necrotic area where the carbuncle has perforated and reached the capsule. (*Drawn by W. Thornton Shiells.*)

of an irregular cavity within the kidney substance may be demonstrated (Fig. 1).

Pathology.

The *macroscopic appearance* of the condition is shown in the accompanying illustrations. On section (Fig. 2) the lower pole is seen to be replaced by a mass, in the centre of which is a number of small yellow purulent foci having a more or less rosette arrangement. Each of these is little bigger than a pin's head. Surrounding these is a broad dense homogeneous zone of fibrous tissue, which merges imperceptibly with the normal kidney substance above, and reaches a much thickened capsule below. No limiting membrane is present. The rest of the kidney has a perfectly normal appearance. The pelvis is a little injected but otherwise healthy. The striking resemblance to the multiple necrotic foci of a skin carbuncle is well seen. From the outer surface (Fig. 3) the inflamed and thickened renal capsule is seen perforated near the lower pole, and the perforation is occupied by yellow necrotic material. It is at this point that the purulent zone reaches the surface, and so, by direct continuity, produces an inflammation of the capsule with abscess formation round the kidneys. Curiously enough, the pelvis is very rarely reached. Although a single carbuncle is the rule, more than one may occur within the same kidney. It is extremely rare for more than one kidney to be affected, but Kretschner [8] records the case of a patient who, after having a nephrectomy for a carbuncle of one kidney, subsequently died of a similar condition in the other.

Microscopic examination in early cases shows that the process begins in the interstitial tissue of the cortex. The yellow areas of softening are occupied by necrotic débris, pus cells, and masses of cocci. Surrounding these is a zone of granulation tissue with leucocytic infiltration and considerable fibroblastic reaction. No trace of renal tissue can be seen towards the centre of the lesion, but on approaching healthy kidney substance little change is observed within the parenchyma, as compared with the interstitial tissue. Here the glomeruli are scanty, replaced by hyaline fibrous tissue, and often surrounded by a hyaline capsule. The tubules show mild catarrhal changes only.

These appearances are in striking contrast with those observed in simple metastatic infections of the kidney seen in pyæmic conditions. Here it is the tubules that are most obviously affected, and these are occupied by renal epithelium, pus cells, and organisms. Where the latter condition is associated with abscess formation, areas of purulent softening are found surrounded by thin pyogenic membranes. These abscesses not infrequently communicate with the renal pelvis.

As in the case of carbuncle of the skin, the *Staphylococcus aureus* can always be obtained in pure culture from the purulent areas.

The special predilection of the kidney to localised infections is extremely interesting. Elimination of organisms from the blood stream may be regarded as a normal function of the kidney, and when this organ is healthy such organisms are always innocuous to it. Lowering of the resistance of the kidney, from whatever cause, may be expected to determine the formation of an abscess within it, and thus trauma of any kind is an important predisposing factor. It has been known, as in Horn's case [6] to follow retention of urine due to prostatic enlargement, and here it is probable that renal congestion favoured the local staphylococcal invasion. In this connexion the experimental work of Brewer [2] is interesting. This worker injected organisms into the circulation of a series of animals, in some of whom the resistance of the kidneys was lowered by various forms of trauma. In 11 out of 16 of the latter animals suppurative foci were found in the kidneys, which in some instances reached the surface and caused perinephric abscess, whereas in those which received no trauma the kidneys remained normal. On microscopic examination the lesions were found to result from plugging of the smaller arterioles and capillaries with organisms.

Treatment.

If the case is seen early medical treatment may be tried, and a course of collosal manganese, staphylococcal vaccines, or sodium nucleinate may be given. When a perinephric abscess is diagnosed, surgical interference will always be required. In that case, as Eisendraht [4] pointed out, simple drainage is never sufficient, and if attempted a subsequent operation will be necessary. In most cases nephrectomy will have to be performed. Colmers [3] analysed the results in 16 cases, and found that of these two patients who had no operation and four who had nephrotomy all died, whereas the other ten patients who had nephrectomy all recovered. Where the carbuncle is found to be single, small, and at one pole, the ideal treatment is to excise it and leave the rest of the kidney, which is always unaffected. This is important, for, as Kretschner [8] has shown, a second carbuncle may occur in the opposite kidney.

As a rule, provided that operation is not unduly delayed, the prognosis is good, and recovery occurs. If no operation is performed death results from subdiaphragmatic abscess, general peritonitis, or even septicæmia and exhaustion.

Bibliography.

1. Barth, L.: Verhandl. d. Deutsch. Ges. f. Chir., 1920, xliv., 94.
2. Brewer, G. E.: New York Med. Jour., 1915, xx., 3.
3. Colmers, F.: Zeitsch. f. urolog. Chir., 1924, xiv., 235.
4. Eisendraht, D. V.: Surg. Clinic. of Chicago, 1920, iv., 1003.
5. Fisher, H.: Annals of Surgery, 1917, lxvi., 247.
6. Horn, W.: Zeitsch. f. urolog. Chir., 1924, xiv., 1.
7. Israel, J.: Chir. Klinik d. Nierenkrank., Berlin, 1921, p. 34.
8. Kretschner, H. L.: Jour. of Urol., 1922, viii., 137.
9. Reschke, K., Arch. f. klin. Chir., 1924, cxxix., 322.
10. Smirnow, A. W.: Zeitsch. f. urolog. Chir., 1926, xx., 243.
11. Souper, H. R.: Brit. Med. Jour., 1920, i., 288.

SIMULTANEOUS BILATERAL ARTIFICIAL PNEUMOTHORAX.

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With Notes on the Radiograms
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(WITH ILLUSTRATIVE PLATE.)

IT is well known that double spontaneous pneumothorax is incompatible with life. Fishberg [1] mentions a case which came under his observation, and quotes Hellin, Staehlin, and Gray, who also reported cases. At first sight it would appear that double artificial pneumothorax in the treatment of pulmonary tuberculosis is dangerous and unjustifiable, but in point of fact similar conditions do not obtain in the spontaneous and artificial types of bilateral pneumothorax. In the first place, the collapse in spontaneous pneumothorax is sudden and uncontrolled, and the thoracic viscera have no time to become adapted to the altered conditions, whereas in artificial pneumothorax the collapse is obtained gradually, allowing plenty of time for adaptation in the circulation and ventilation of the lungs. Secondly, in spontaneous pneumothorax an opening is present in the visceral pleura through which organisms from the lung may pass to infect the pleural cavity.

Bilateral artificial pneumothorax was first suggested and carried out in 1913 by Parry Morgan,[2] who also first pointed out the fact that the diseased areas in the lung tend to remain collapsed, while the healthy portions re-expand. This principle of selective collapse in simultaneous bilateral artificial pneumothorax has been studied further by Barlow and Cramer,[3] who have obtained good results in cases of early bilateral pulmonary tuberculosis. Their method is to keep the diseased areas in both lungs collapsed by means of injections at frequent intervals of small quantities of air, and at the same time to allow the unaffected parts to expand. In a previous communication (with F. B. Hobbs [4]) I referred to the difficulties of bilateral selective collapse in comparatively advanced bilateral disease—viz., the presence of pleural adhesions over the diseased areas, and the occurrence of febrile reactions after each refill. Forlanini,[5] Feldman,[6] Burnand,[7] and others have performed consecutive bilateral pneumothorax—i.e., they allow the lung which is first collapsed to expand before collapsing the other lung.

Recent work in France, notably by Rist and Coulaud,[8] has shown that it is possible to have practically complete collapse of both lungs without the onset of dyspnœa or cyanosis, and with considerable improvement in the condition of the patient. Several months ago I had an opportunity of seeing with Dr. Coulaud at the Hôpital Laënnec in Paris a number of these patients, and I was struck by the apparent incongruity between the patients' condition of respiratory and cardiac comfort and the radiographic appearance of practically complete collapse of both lungs. The vital capacity in these cases is much lower than normal, and Rist, Coulaud, and Chabaud [9] offer the explanation that the condition is comparable with the state of affairs present in the lungs of the newly born child—i.e. there is no reserve air, and the child exists on the residual air in the alveoli. Whether this is the true explanation or not, it would appear that bilateral pneumothorax, gradually induced, is not incompatible with life, especially where the diseased area in both lungs is not of great extent.

The following case of simultaneous bilateral pneumothorax appears worthy of record, not only on account of the improvement in the patient's condition, but also because it afforded an opportunity of studying in the same patient the physical signs of two pneumothorax cavities, in one of which were adhesions and a pleural effusion, and in the other a free pleura and no effusion.

A girl, aged 17, was admitted to St. Thomas's Hospital on Oct. 16th, 1926. She had been ill for one month with cough and sputum, pyrexia, night sweats, and progressive loss of weight. She was found to have pulmonary tuberculosis involving the upper half of the right lung, with a small cavity at the apex, and an area of infiltration about the left hilum, spreading into the surrounding lung tissue. Tubercle bacilli were present in the sputum. The radiogram (Fig. I.) shows the extent of the disease in the lungs. For ten days she was kept at rest in bed, and during this time there was an irregular evening temperature varying between 99° F. and 101° F. On Oct. 25th pneumothorax was induced on the right side. Refills were given on the 26th and 28th. A fall of the temperature to normal coincided with the induction of the pneumothorax. A radiogram (Fig. II.) taken at this stage shows a moderate amount of collapse of the right lung with an adhesion at the apex. An interesting feature of this radiogram is that the three lobes of the right lung are shown clearly, with evidence of disease in the upper two. On Nov. 1st pneumothorax was induced on the left side. Whether as a result of this induction or merely as a coincidence, the temperature rose to 102° F. and an effusion into the *right* pleural cavity was observed. The temperature remained high, swinging between 102°F. and 100° F. for three weeks, after which the fluid was withdrawn and replaced by air. A few days after this replacement the temperature became normal. No further effusion or rise of temperature occurred.

During this period, small injections of air, averaging 300 c.cm., were made into the left pleural cavity at intervals of nine days, but they were found not to be sufficient to keep the lung collapsed, and the interval was shortened to four days. On account of the fact that the patient breathed entirely with the left lung, it expanded again, and the pneumothorax had to be reinduced on at least four different occasions. It was then decided to bring about more collapse with larger quantities of air, and this was done, but care was taken not to bring the intrapleural pressure on the left side above zero. In order to keep the lung partially collapsed, it was found that 600–700 c.cm. of air given at weekly intervals were necessary.

The fact that the pleura becomes sclerosed and resistant after a pleural effusion is well illustrated by the rapid rise of the intrapleural pressure from a marked negative to a marked positive pressure after the injection of a small quantity of air, e.g.:—

Jan. 10th, 1927, right side, −14 −7; 250 c.cm. air, +7 +14.

A larger quantity of air injected into the left pleural cavity does not cause a similar rise in the intrapleural pressure, e.g.:—

Jan. 11th, left side, −10 −5; 550 c.cm. air, −10 −1.

At no time did the patient experience respiratory or cardiac distress, although there was a considerable degree of collapse of both lungs. While giving a refill on the left side, the onset of a slight sensation of tightness of the chest was taken as an indication that

DESCRIPTIONS OF ILLUSTRATIONS.

(*See Plate.*)

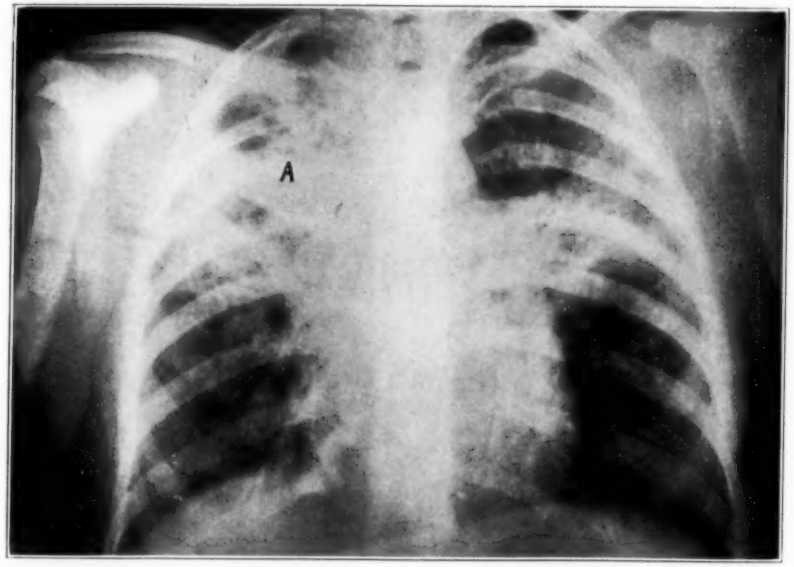
FIG. I. shows the appearances before treatment. There is well-marked fibroid disease involving the upper half of the right lung with cavitation of the apex (A). The left lung shows hilum disease extending outwards almost to the pleura.

FIG. II. shows demarcation of the three lobes after collapse of the right lung. Disease with cavitation is seen in the upper two lobes (1, 2), whereas the lower lobe (3) is clear. The left side is unaltered.

FIG. III. after partial collapse of both lungs, shows on the right side adhesions to the chest wall and a small collection of fluid at the base. On the left side there is a marked diminution of the area of infiltration as compared with Fig. I., the outline of the lung being well seen and the apex lying at the level of the fourth rib behind (A). It also illustrates the mode of collapse when no adhesions are present—i.e., the apex is displaced downwards.

FIG. IV. shows practically the same appearance as Fig. III., except that the left lung has been allowed to expand a little. It now shows much sharper definition of the area of infiltration suggesting early calcification.

I.



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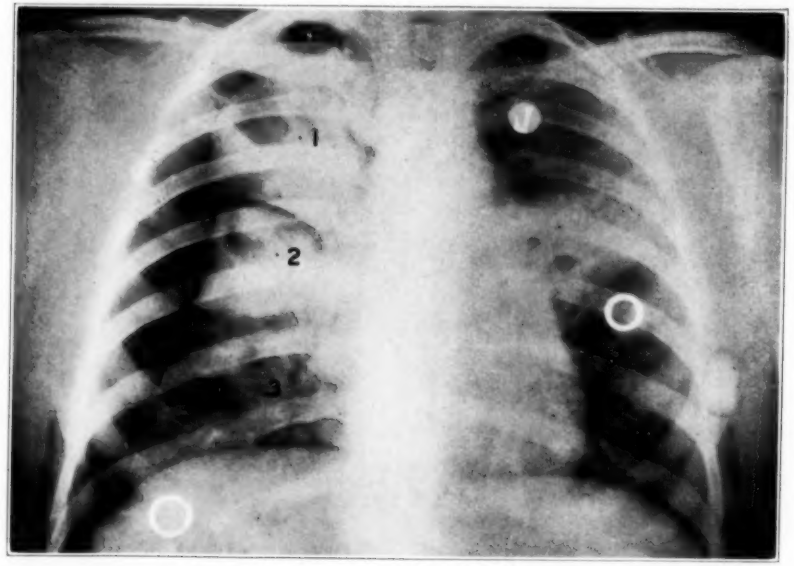

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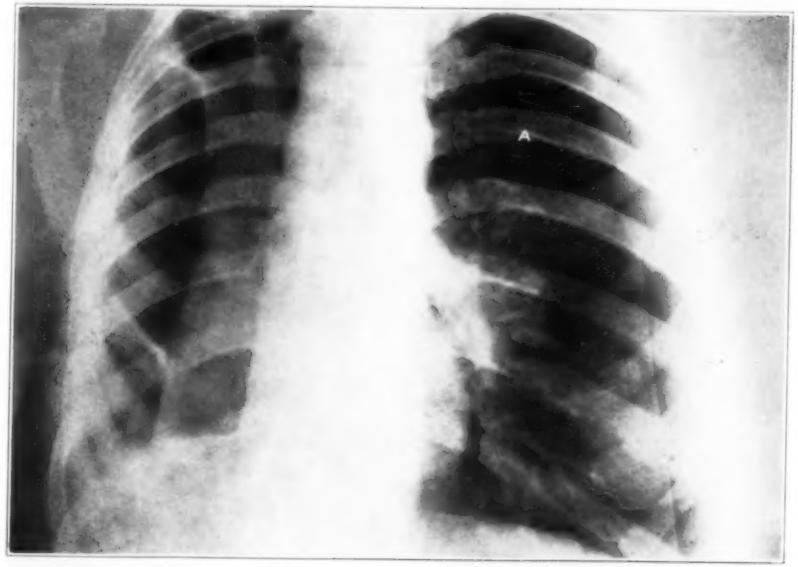
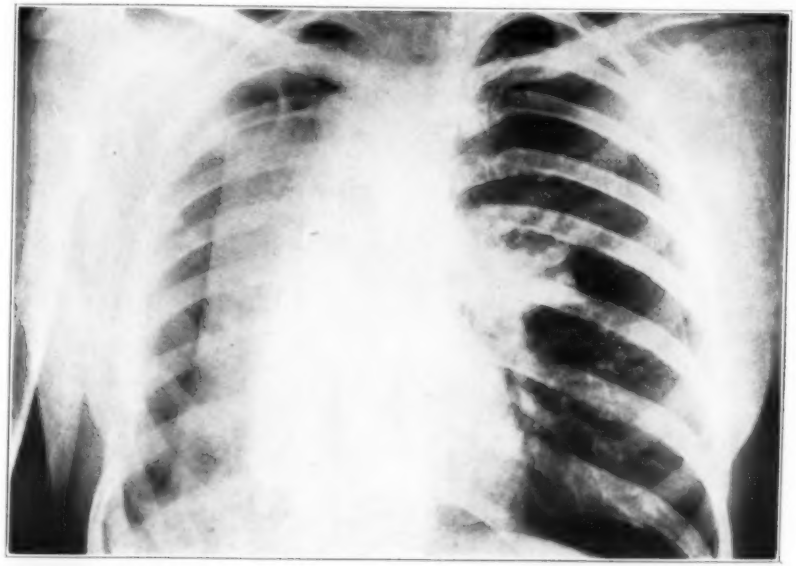


IV.



DR. A. I. G. McLAUGHLIN AND DR. G. FILDES: SIMULTANEOUS BILATERAL ARTIFICIAL PNEUMOTHORAX.

(Descriptions of Illustrations are given on the opposite page.)

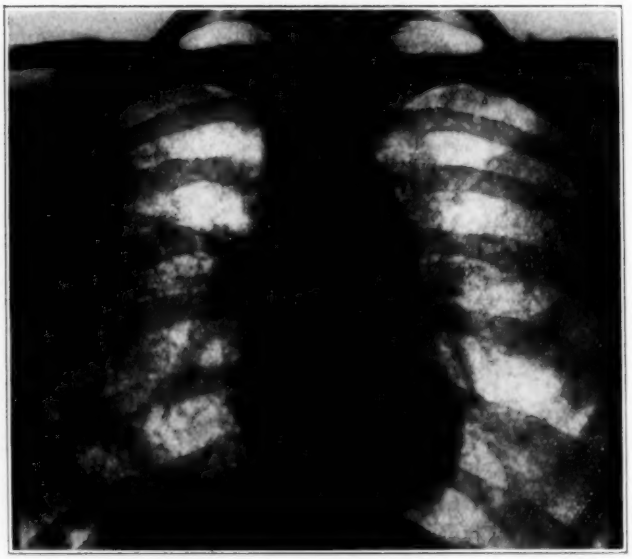
I.

Section through right lung.

II.

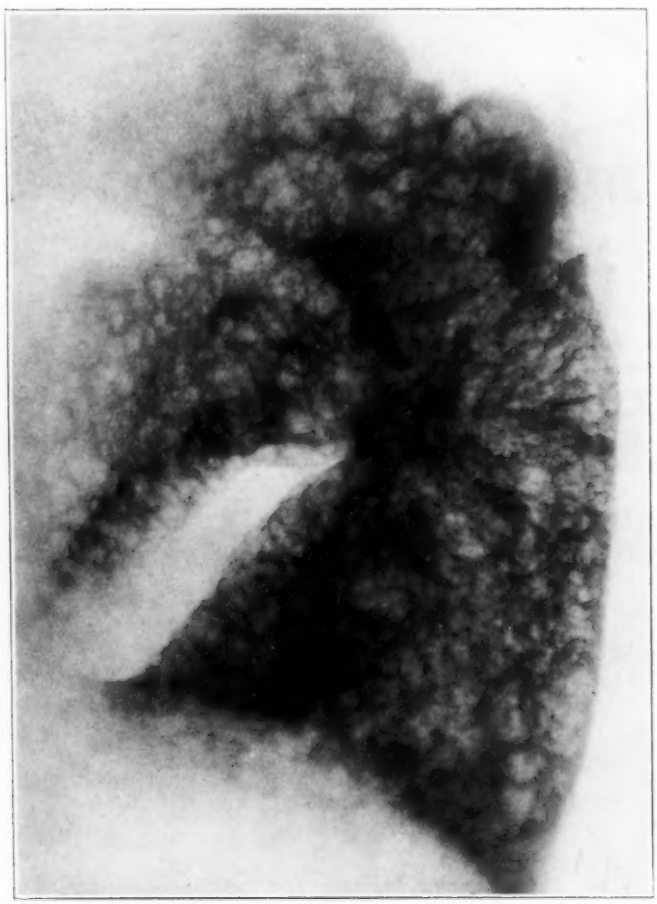
Section through left lung.

III.



Radiograph taken Feb. 4th, 1926, when practically no physical signs were present.

IV.



Radiograph of left lung taken 6 hours after death.

DRS. KERLEY, SHORE, AND YOUNG: FIBROCYSTIC DISEASE OF THE LUNG.

enough air had been injected. This symptom usually passed off within five minutes. I did not aim at securing the practically complete collapse obtained by Rist and Coulaud, but the degree of collapse obtained was much more than the selective collapse advocated by Barlow and Cramer.

An interesting point is that no febrile reactions occurred, with the exception that the onset of pleural effusion on the right side was attended with pyrexia. It appears to be a significant fact that the effusion occurred on the right side where there was a pleural adhesion, and not on the left side where there was a free pleura.

In April, 1927, the patient was able to get out of bed for four hours during the day and to take a fair amount of exercise. The degree of collapse in both lungs is seen in the radiograms (Figs. III. and IV.). There is no cyanosis or dyspnœa and very little cough; the temperature is normal; the sputum is scanty and does not contain tubercle bacilli. During one period the left lung was compressed to a little more than half its full volume. It was noticed that during this time the weight remained stationary. As soon as the lung was allowed to expand a little the weight began to increase.*

The interval for refills has now been increased to 14 days for the left side and 28 days for the right side.

NOTE ON THE PHYSICAL SIGNS.

Percussion.—The percussion note was uniformly hyperresonant over the whole lung area on both sides, with the exception of a small area at the right base where the note was impaired owing to the thickened pleura resulting from the pleural effusion. The area of cardiac dullness was diminished considerably.

Breath Sounds.—On auscultation the breath sounds were absent over the whole of the right lung, but over the left lung they could be heard invariably, even when a considerable degree of collapse of the lung existed. This would seem to show that absence of the breath sounds is not a constant concomitant of pneumothorax. Indeed, it is a comparatively common occurrence, in the out-patient department, to see cases of partial spontaneous pneumothorax in which the character of the breath sounds vary little, if any, from the normal.

Coin or Bell Sound.—The coin sound developed on the right side after the absorption of the pleural effusion, becoming more marked as the pleural membrane became more sclerosed. On the left side, the coin sound on numerous examinations was never elicited. This fact led me to investigate more closely the incidence of the coin sound in the other cases of artificial and spontaneous pneumothorax under my care, and I have come to the following conclusions: (1) The coin sound is elicited in its most marked and characteristic form when the pleura has been thickened or sclerosed by the onset and subsequent absorption of a pleural effusion, either serous or purulent. (2) The main condition necessary for the production of the coin sound is not, as Fishberg[10] maintains, the presence of fluid, but the hardening and increased elasticity of the pleural membrane so that it resembles a sounding-board, producing forced vibrations. (3) The same explanation holds for the production of the coin sound over cavities in the lung—viz., that there must be an air space enclosed by thick resistant walls to amplify the vibrations of the metal. (4) The coin sound is rarely heard over a pneumothorax cavity where a pleural effusion has not occurred. If it is elicited over such a cavity I venture to suggest that this is a case of pure resonance, as distinct from forced vibration, and that the important feature is therefore an accidental correspondence between the wave-length and the dimensions of the cavity. (5) The intensity of the coin sound can be increased a little by raising the pressure in a pneumothorax cavity from a negative to a positive pressure, but the tension in the cavity is not, as Bendove[11] suggests, the primary factor.

Subfascial Emphysema.—On one occasion, for five days after a refill on the left side, sharp crackling crepitations, synchronous with the systole and diastole of the heart beat, were heard over the cardiac area. These sounds were due apparently to subfascial emphysema, which is a rare occurrence in artificial pneumothorax.

References.

1. Fishberg, M.: Pulmonary Tuberculosis (3rd ed.), 1922, p. 526.
2. Morgan, W. Parry: Quart. Jour. Med., 1917, xi., 1.
3. Barlow, N., and Cramer: Amer. Rev. Tub., 1922, vi., 75.
4. Hobbs, F. B., and McLaughlin, A. I. G.: Practitioner, 1926, iii., 111–121.
5. Forlanini, C.: Gazz. med. ital., 1911, xlii., 41, and seq.
6. Feldman, G.: Tuberculosis, 1920, xii., 229.
7. Burnand, R.: Bull. et. mém. Soc. méd. d. hôp. de Paris, 1920, xliv., 1569.
8. Coulaud, E.: Ibid., 1925, xlix., 792–795.
9. Rist, E., Coulaud, E., et Chabaud, J.: Ibid., 1926, xlix., 1583.
10. Fishberg, M.: Pulmonary Tuberculosis (3rd ed.), 1922, p. 529.
11. Bendove, R. A.: Amer. Jour. Med. Sci., 1926, clxxii., 221–229.

A CASE OF FIBROCYSTIC DISEASE OF THE LUNG.

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(WITH ILLUSTRATIVE PLATE.)

THE literature contains descriptions of several cases of cystic degeneration, both congenital and that following acute fevers in very young children. Oudendal,[1] who has recently examined the literature thoroughly and has published exact pathological records of cases which have come under his notice, describes only one which resembles our case given below histologically. In Oudendal's case only a limited area in the right lower lobe was affected. Chronic pulmonary tuberculosis was associated with the cystic condition. He gives the name of "fibrocystadenoma pulmonare" to the pathological condition, but his description and his plates suggest a chronic inflammatory process rather than non-malignant tumour formation. In one case observed by W. A. Young (not yet reported) localised areas of fibrocystic change were found in both lungs similar to the case above reported. The cause of death in this case was tuberculous pericarditis. No trace of tuberculous infection was found in the lungs.

Our Case Described.

The following is the report of our case, which we believe to be of a nature previously undescribed:—

A woman, aged 32, attended the out-patient department, Royal Chest Hospital, on Feb. 12th, 1926, complaining of cough and dyspnœa. She had been in her usual health till October, 1925, when cough began. There was no expectoration, but cough increased and compelled her to give up her household duties towards the end of January, 1926. Shortness of breath became marked in February, and there was also complaint of left submammary pain. Past health had been satisfactory, except for "pleurisy" on the left side eight years previously. There had been steady loss of weight. In 1918 the weight was 12 st. 10 lb., in 1923, 9 st. 4 lb., and on Feb. 12th, 1926, 7 st. 12 lb. in ordinary clothes. She had borne two children, the youngest being 2½ years old. There was no family history of tuberculosis.

Examination showed a spare, slightly built woman, of height above the average. There was slight cyanosis, evident dyspnœa on slight exertion, and some clubbing of the fingers. The expansion of the chest was very poor;

* *September, 1927.*—Progress has been maintained. The weight is increasing steadily, and all symptoms such as cough, sputum, and pyrexia have disappeared. The patient, who was discharged from the hospital in May, is now living at home, and is able to lead a comparatively normal life.

[1] Oudendal, A. J. E.: Ueber Epithelproliferationen und cysten in den Lungen, Virchow Archiv f. Path. Anat., 1923, ccxliv., 59–83

there seemed to be some retraction in the right supraclavicular region. The vocal fremitus and vocal resonance were equal all over, the percussion note was fairly good, the air entry was weak. Bronchitic signs were scanty, but rather more on the right side than on the left. The heart seemed normal in position, and the sounds were natural. The whole picture of cyanosis and dyspnœa, in excess of the findings on physical examination, suggested the possibility of some obstructive tumour in the mediastinum.

Dr. Kerley reports thus on X ray examination on Feb. 4th, 1926 :—

Heart normal. Diaphragmatic movements restricted on both sides. Lungs: Both lungs are diffusely infiltrated, with the exception of the apices. There is a peculiar meshwork appearance between the separate foci of infiltration. The condition is very atypical of tuberculosis, and suggests rather diffuse carcinomatous metastases. Trachea is displaced to the right and appears compressed. Thickened interlobar pleura on the right side.

The patient was admitted to hospital on March 12th, 1926. While she was at rest in bed the temperature varied from 97·6° to 99·4° F. for the first four weeks, the evening temperature being about 99°. During this period the pulse ranged from 80 to 130, and the respirations from 20 to 34. She was blue and distressed even while at rest in bed. The cough was troublesome, but sputum was scanty, though râles were heard at both apices. There was frequent complaint of pain in the left submammary region, and some hyperæsthesia was found in the seventh, eighth, and ninth spaces. The urine was normal.

On the supposition that there was a neoplasm, investigations were made to identify a primary growth. Laryngoscopic examination and radiological examination of the intestinal tract showed no abnormality. Pelvic examination showed vagina and uterus to be normal. The sputum contained pus cells, but no cells suggestive of new growth were found. There were no red blood cells and examination for tubercle bacilli was negative on six occasions. The Wassermann reaction was negative.

Progress.—During the fifth week the temperature was normal, the respiration-rate fell somewhat, and there seemed to be a definite improvement. The colour improved though the cough was still troublesome. The patient began to get up. Râles were noted at both apices as before, and in the back on the right side. The percussion note seemed impaired over the right side, and the air entry rather weaker. Up to the fifth week the patient had lost 1 lb. in weight. The improvement was not maintained, and dyspnœa forced her back to bed. Between the sixth and the tenth week the temperature was rising to 99·6°, the pulse to 140, and the respiration-rate occasionally to 35 or 40. During this period there was marked loss of flesh and strength, and the patient was scarcely able to get up at all. The trachea was slightly displaced to the right, some dullness was found in the first and second spaces on the right of the sternum. Bronchitic signs were heard in the lungs, first on the right side, later on both sides. The patient died on April 28th, 1926.

Post-mortem examination (28/5/26).

External appearances: Moderately well covered; clubbing of fingers and toes of moderate degree; very marked post-mortem discoloration.

On section: The right lung filled the right chest, the left lung showed partial collapse. Dense adhesions over the anterior margin of right lung below apex, and chiefly attached to an accessory lobe occupying the antero-inferior angle of the right upper lobe; numerous interlobar adhesions between accessory lobe and upper and middle lobes; some recent clear fibrinous exudate over the outer surface of both lungs, with a few cheesy flakes over the left lower lobe; no adhesions over the left lung; no excess of fluid in either pleural sac. Both lungs showed irregularly nodular surfaces; the nodules varied in size from that of a small pea to the largest, on the diaphragmatic surface of the right lung, which measured approximately 1¼ by 1¼ inches; they were not spread along the thin margins of the lung like emphysematous bullæ, but distributed generally over the surface; when cut into they appeared to contain gas under pressure (Figs. I. and II.). Their outer walls varied with their size, the largest showing fairly dense outer walls. Their lining membranes were smooth and of a pale grey colour. No cysts were found to contain any exudate. A few showed partial loculation or thin bands running from wall to wall. The condition was generalised, and lung tissue of normal appearance was only found in the small accessory lobe in the right lung and in a few small areas beneath the pleura in the left lower lobe; the cysts varied in size from the largest mentioned to pin-head size. There appeared to be an increase of fibrous tissue in the septa between the cysts. The glands in the hila showed some acute congestion, but no appearances of chronic infection. Some muco-pus was found in the main bronchi and their largest branches. The tracheal mucosa was not congested. Slight general enlargement of mediastinal glands. The remaining organs were normal.

Histological Appearances.

1. *Lungs.*—The pleura shows some general thickening. The interlobar septa are considerably increased in thickness, and appear as large fibrous areas of irregular shape. The lung tissue proper consists of small isolated areas varying considerably in their appearance from normal alveolar structure to catarrhal and early pneumonic areas. Some collapse and changes of an emphysematous nature are present. The cysts vary very much in size, in the character of their epithelial linings, and in their association with surrounding tissues. From the simple flattened endothelial lining of the emphysematous bulla there are all gradations through the simple cuboidal epithelium of the small contracted alveoli, which are progressively lined with cuboidal, low columnar, and transitional columnar epithelium of the larger cysts. With few exceptions there was no intracystic exudate and no desquamation of the lining membranes. This is in marked contrast to the bronchi and bronchioles, which show evidence of both chronic and recent subacute catarrhal changes. In both bronchi and bronchioles there are numerous areas of "epidermisation," œdema, congestion, and desquamation of epithelium, hyperplasia, and early cystic degeneration of the submucous bronchial glands, and purulent exudation into their lumina. Several cysts show variation in their lining membrane from flattened endothelium in one portion of their wall to cuboidal and transitional columnar in another portion. In many cases the walls are smooth and the contour comparatively regular. In those with a more differentiated epithelium, irregularities of outline and downgrowths of epithelium with irregular "pouching" of the walls, almost amounting to an adenomatous condition in some areas, are not uncommon. The stroma surrounding the cysts is, in some areas, fibrous tissue. In others there is a moderately cellular "granulation tissue" with young fibroblasts, small mononuclears, endothelioid cells, large mononuclears containing pigment, a few eosinophils, and an occasional plasma cell. In a few cases the cysts are immediately contiguous to simple lung tissue. The "granulation tissue" is almost absent from some areas of the lung where more advanced fibrosis is present, but is present in considerable amount in other areas. The vascularity of the "granulation tissue" is of moderate to marked degree. No thromboses were found, but numerous arterioles show some degree of obliterative endarteritis. Careful search of the granulation tissue areas showed a few small "giant cells," not of tuberculous type, but always associated with heavy deposits of carbon pigment and probably of the "foreign-body giant-cell" type. No tubercle bacilli were found in several sections examined, and sections stained to show other organisms did not reveal any in cystic or alveolar exudates. A few Gram-negative bacilli and diplococci were found after prolonged search in the exudate of the bronchi. No unstriped muscle-fibres were found in any cyst wall, and elastic tissue was scanty or absent.

2. *Thymus.*—An area of lymphatic tissue, which was considered originally to be a lymphatic gland, but which, on section, showed remnants of thymus structure, was found densely adherent to the anterior margin of the right lung. It measured roughly ¾ by ½ by ½ inch, and was buried in dense fibrous tissue.

3. *Glands in the hilum of the right lung* show some endothelial and general lymphoid hyperplasia with congestion, probably terminal in origin.

Discussion.

The age of our patient precludes the possibility of a congenital origin of generalised fibrocystic disease. Tubercle has been excluded. Syphilis is a possible cause, and is suggested by the amount of obliterative endarteritis present. The Wassermann reaction was tested only once with negative result, and the Sigma reaction and a Wassermann reaction after a provocative injection of novarsenobillon were not tried. No evidence of mycotic or parasitic infection of the lung was found, and the condition was quite unlike that produced by chronic infection with catarrhal organisms. The condition appears to be analogous to fibrocystic disease of the breast, and to be due to toxic action (rather than direct infection of the lung), producing gradually increasing fibrosis, loss of elastic tissue, "occlusion-cyst" formation with irregular epithelial hyperplasia, and metaplasia and eventual loss of function. The inflammatory changes are considered to be of a secondary nature and of comparatively recent origin. The presence of gas under pressure in some of the cysts possibly represents excretion of gases from the blood.

The X ray appearances of this unique case bear a remarkable resemblance to those of so-called miliary carcinoma of the lung. On close examination of the skiagram the prominent features are: (*a*) An extensive fine network of striations, involving the whole of both lungs with the exception of the apices (Fig. III.). The striations are finer than the normal lung markings, coarser than the markings of chronic stasis, and ramify in a haphazard fashion not seen in either of these conditions. (*b*) Scattered about the striated areas are small dark spots, not homogeneously opaque, and having no definite contour. In contrast to the clear cystic areas immediately about them the spots appeared relatively opaque. From the post-mortem findings there is no doubt that they correspond to the small areas of lung tissue left.

Miliary tuberculosis was at once excluded, as the characteristic, or the typical, clear-cut millet seed opacities were absent and the apices were free. So-called miliary carcinoma, which is occasionally seen secondary to carcinoma of the stomach, gives a similar picture. The only point which might help to differentiate the two conditions is that in carcinoma the striations are somewhat finer and the spots more regular in outline and more opaque. The presence of a rare disease of the lungs gave rise to the erroneous diagnosis of a mediastinal neoplasm. The condition dated from December, 1925, or at latest from February, 1926, when she came under observation. The duration was certainly four months, and more probably six. A high degree of cyanosis and dyspnœa, with physical signs of an indefinite character, led to a search for a cause of deficient air intake.

The cause was evidently intrinsic in the lung substance. Steady loss of weight of long standing suggested neoplasm, and this suggestion received support from radiography. The very indefinite physical signs left the diagnosis doubtful; the presence of parasternal dullness, weaker air entry on the right side, and displacement of the trachea which appeared later, suggested the possibility of partial obstruction of the right bronchus. This displacement may be explained by the pleurisy in the region of the upper and middle lobes, or by an unequal expansion of the two lungs, which caused a displacement of the mediastinum to the right. This is remarked upon post mortem, and is borne out by radiological findings.

Clinical and Laboratory Notes.

A CASE OF FAMILIAL DISSEMINATED SCLEROSIS.

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CASES of familial disseminated sclerosis are of extreme rarity; in fact, it has been stated that the total number reported can be counted on the fingers. J. R. Reynolds [1] records two cases, one being that of a family in which three members were affected. André Léri [2] had a case in which two daughters and the mother were affected, the mother having contracted the disease when over 50 years of age. A few less authentic cases have been recorded in a paper by Donald Frazer.[3] Many cases of familial nervous degenerations, such as Friedreich's ataxia, have been shown as "familial disseminated sclerosis," but careful investigation of the family history should prevent confusion. The history in the case recorded here is as follows:—

The parents are both alive and well. One married son, aged 40, is alive and well. One living daughter suffers from disseminated sclerosis, and one son and one daughter have died from the disease. The maternal grandfather died of "heart disease," aged 49; the grandmother died aged 62. The paternal grandfather died aged 80, and the grandmother died aged 30 (cause unknown).

History of the Dead Son (supplied by courtesy of the Director-General of Military Services, Ministry of Pensions).—Died at the age of 32; married; one child alive and well. He was wounded in the left leg during the war. In 1921 he developed "neurasthenia," and complained of seeing double. In 1922 he complained of weakness of the legs and shakiness of the hands. On examination it was found that his right grip was greater than the left; he had nystagmus and exaggerated knee-jerks. His right ankle-jerk was greater than the left, and his right plantar reflex was extensor. The condition was diagnosed as disseminated sclerosis.

In August, 1923, both plantar reflexes were extensor and the abdominal reflexes were sluggish; the right reflexes were still brisker than the left. Both legs were spastic. The left pupil was larger than the right, although both reacted to light and accommodation. He had nystagmus and strabismus, spastic gait, ataxia, and slow speech. He fell with his eyes closed, and had great incoördination and tremors of the hands. In April, 1925, he was bedridden and had incontinence of urine. He squinted, and his speech was unintelligible. His reflexes were similar to those found in 1923. His left pupil was still larger than the right, and both reacted. He died in 1926, and was certified as having died of disseminated sclerosis.

[1] Brain, 1904, xxvii., 163.
[2] Rev. Neurol., 1924, pt. 1, xxxi., 788.
[3] Glasgow Med. Jour., 1880, xiii., 199.

History of the Dead Daughter (kindly given by Dr. Ashley Steel).—Died aged 35; single. The time of the onset of the disease is unknown, but on April 3rd, 1922, the patient's knee-jerks were exaggerated, and there was a loss of power in the muscles of her leg, most marked in the peronei; she had no ankle-clonus nor extensor plantar reflex. By July 4th, 1923, she had developed intention-tremor and ataxia of the hands and feet. She showed mental degeneration. On April 20th, 1924, her left pupil was larger than the right, but reacted to light and accommodation. No nystagmus was present; the discs were pale, but there was no atrophy. Her arm-grips were weak, but she had no intention-tremor. All arm and leg reflexes were exaggerated. Her abdominal reflexes were absent and her plantars were extensor. She complained of posterior root-pains.

On Jan. 8th, 1925, she had diplopia and her condition remained unchanged until April 2nd, when she had acute pains of left renal distribution. Radiogram and urine were then normal, but on July 2nd she had a few pus cells in her urine; there were no casts. On Oct. 8th her pupils reacted sluggishly and her reflexes were exaggerated. On the sensory side she had definite loss to pain, heat, cold, and touch, below the first thoracic nerve. On Jan. 7th, 1926, she had anæsthesia on the left side up to the seventh cervical nerve. Her feet were œdematous and she had incipient heart failure. Lumbar puncture showed diminished pressure but clear fluid. The Wassermann reaction was negative. Lange's test, albumin, sugar, and cells were normal. Towards the last she suffered from flexor spasms and became gradually weaker. She died on March 20th, 1926.

History of the Living Daughter.—Her age is 22. She was first seen on Jan. 25th, 1922, and stated that she fell downstairs three weeks ago, but did not hurt herself. The next morning she noticed that she was numb in the left side and had difficulty in using her left hand. She improved for a fortnight and then relapsed, her right hand also becoming numb. On examination she had slight myopia and nystagmus on looking laterally. The cranial nerves were normal, except for slight weakness of the left face and slight deviation of the tongue to the left. There was no sensory change except slight loss of the sense of position of the left hand, with some astereognosis. The left abdominal reflexes could not be definitely obtained. The right knee-jerk was brisker than the left, and the left plantar reflex gave a doubtful extensor response. The right plantar and other reflexes were normal. A diagnosis of disseminated sclerosis was made.

Five months later she developed pain in the left side, and her left hand and arm became weaker and painful. On May 16th, 1923, she had a definite relapse, and her left arm and leg became much weaker. Her vision was now dim. Five months afterwards again she had more pain in her left arm. On Dec. 11th, 1924, she developed petit mal. She also complained of girdle-pains and of paræsthesia over the fifth nerve, the corneal reflex being normal. Her condition remained about the same until April 19th, 1925, when it was found that the right pupil was larger than the left. She had crossed anæsthesia, slight left facial weakness, and her left hand was still weak. She had incoördination of her left limbs and a positive Romberg's sign. On Feb. 18th, 1926, she had slight nystagmus in all directions, most marked to the left, with slight left facial weakness and diminished sensibility to cotton-wool and pin-prick over the left side of the face and body. The left limbs were weaker, more spastic, and less well coördinated than the right.

The plantar reflexes were extensor; the abdominal reflexes were not obtained. Although Romberg's sign was negative, she tended to fall to the left, and was not steady. On August 18th her condition was the same except that there was an area of hyperæsthesia over the third thoracic nerve-root distribution. No change of importance was noted when she was examined on May 1st, 1927.

It is interesting that this disease should have picked out three members of a family in this manner, and it is very remarkable that two of those affected should complain of root-pains, which are uncommon in disseminated sclerosis.

I should like to express my thanks to Dr. Ashley Steel and the Director-General of Medical Services, Ministry of Pensions, for the records which they supplied; and to Dr. C. P. Symonds for his encouragement and permission to publish details of the case of the living daughter. Dr. R. N. Ironside and Dr. M. Critchley have kindly assisted with references.

A CASE OF PERSISTENT AURICULAR FIBRILLATION IN A CHILD OF SIX.

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THE following case came under our observation.

Clinical History.—The patient, aged 6, is the only living child; his brother, one year older, died of broncho-pneumonia in 1926. His father and mother are well and the boy has had no previous illness which has given cause for anxiety.

About the beginning of March he complained of stomach-ache and seemed feverish; the onset was fairly abrupt. His only other symptom was headache, but a few days later he began to cough, and with each bout became breathless and blue in the face. There was no nasal discharge nor complaint of sore-throat. He continued at school till March 29th, when he was admitted to hospital.

When first examined he was seen to be cyanosed, even when lying quite still, but not particularly distressed or dyspnœic. His pulse was completely irregular and of very variable pressure, and there was a good deal of cardiac dilatation, a diffuse apex beat being felt in the sixth intercostal space, one inch outside the nipple line. During the first 48 hours of observation the heart showed three distinct rhythms: (*a*) complete irregularity, like that of an untreated auricular fibrillation; (*b*) regular tachycardia (rate 160 to 170 per minute); (*c*) regular tachycardia, broken by an extrasystole occurring every fifth or sixth beat (rate 120 to 130). This last rhythm was maintained for several hours consecutively, and while it continued each pulsation reached the radial pulse—i.e., the apical and radial rhythms corresponded.

The temperature was slightly raised for the first few days (99° to 99·5° F.). The liver and spleen were not enlarged, nor was there any œdema. The tonsils were moderately swollen and very red.

Since the first few days rhythm (*a*) has been constant, but the number of beats per minute has fallen very considerably; his general condition has remained very good and the cyanosis only appears with exertion. During his stay in hospital, in spite of a restricted diet, he has become very fat. From a throat swab taken the day after admission a bacillus was cultured morphologically identical with the Klebs-Löffler bacillus. Three further swabs taken in the course of the next two weeks all proved negative. No signs of a faucial or pharyngeal membrane were seen, nor were there any symptoms of laryngitis. No evidence of peripheral neuritis was found.

Treatment.—Drugs were administered as follows: (1) Digitalis. ℥xv. of the tincture were given in the first 24 hours and gr. 1/200 of Nativelle digitalin daily for the next 8 days. (2) Antidiphtheritic serum, 5000 units, was injected on the second day. (3) Sodium luminal was given (gr. 1 to 1½ daily) after April 15th until the appearance of a diffuse erythematous rash necessitated its withdrawal. The drug was given to reduce a restlessness due, not to a morbid excitement, but to a natural boyish energy. (4) Quinidine was given in graduated doses during the fortnight May 6th to 19th, beginning with gr. 1½ daily and reaching a maximum of gr. 24 in the day. In all, gr. 80 were given.

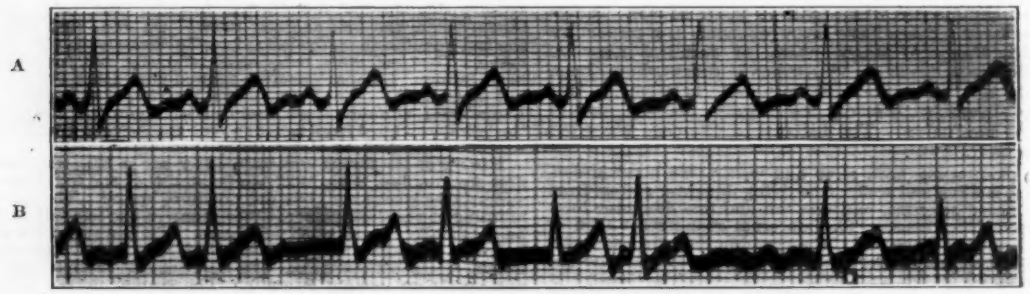
Throughout no therapeutic effect could be noted.

Comment.

Of the two electrocardiographic tracings reproduced the first (A) shows a normal complex with some sinus arrhythmia; the second (B), which was taken on the same day (March 31st, 1927), is typical of auricular fibrillation. All subsequent tracings (taken frequently throughout the period of active treatment) have shown the same condition.

The ætiology in this case seems very doubtful; the culture of a bacillus morphologically identical with the Klebs-Löffler is the only evidence suggesting a diphtheritic toxæmia as the cause. J. Parkinson [1] has recorded a case of combined heart-block and auricular fibrillation developing in a man of 22 three weeks after the onset of a pharyngeal diphtheria; joint pains and a cervical adenitis accompanied the onset of the condition. Dr. Foord Caiger informs us that he has not observed any definite case of auricular fibrillation in the course of his long experience of diphtheria in the Metropolitan Asylums Board Service; he points out also that serious heart lesions in diphtheria are always associated with a severe faucial infection which could scarcely have escaped recognition had it occurred in the case of which we write. G. A. Sutherland and C. F. Coombs [2] have recorded the death of a boy, aged 5, from auricular fibrillation and heart failure, within six days of the onset of a first attack of rheumatism. The heart post mortem showed an extensive myocardial degeneration.

It seems clear that in the present case some degree of myocarditis was present, occasioning extrasystoles, and probably auricular flutter, and ultimately leading to auricular fibrillation. The fact that the boy's previous health was good would seem to indicate that the condition arose as the result of either a severe strain—of which there is no history—or, more probably, from the selective action of some poison. One of us (D. G. L.) has observed on a previous



Two electrocardiograms taken on March 31st. The upper one (A) shows a normal complex with some sinus arrhythmia. The lower (B) is typical of auricular fibrillation.

[1] Heart, 1915–17, vi., 13. [2] Ibid., 1913–14, v., 15.

occasion the rhythm due to the regular occurrence of extrasystoles develop in a girl of 8 years of age who had been for some weeks in bed, under treatment for rheumatic endocarditis (mitral disease). She was not receiving digitalis at the time and had been progressing very satisfactorily. The arrhythmia lasted for 24 hours, during which time she showed signs of incipient heart failure—nausea, vomiting, pulmonary congestion, enlargement of liver and spleen—which disappeared when the normal rhythm returned. The boy, whose case is described above, gave no history of rheumatism and showed no evidence of infection except from the appearance of his tonsils.

Our thanks are due to Dr. Reginald Jewesbury, under whose care the boy was admitted, for permission to publish an account of his case.

NOTE ON A NEW METHOD OF TREATING CARCINOMA OF THE CHEEK.

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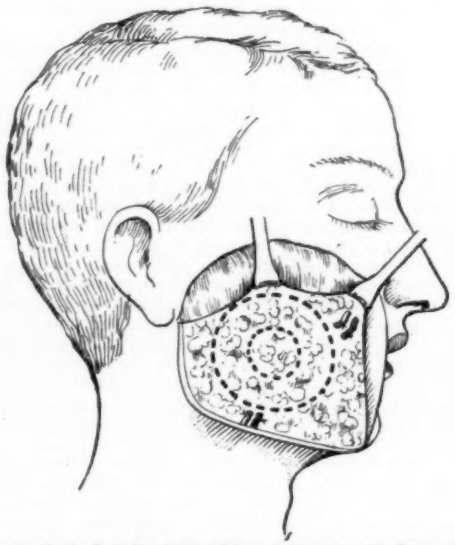
SURGICAL treatment of carcinoma of the cheek presents considerable difficulties. The condition is seldom seen in its early stages, and generally by the time the patient comes under observation the growth has involved a large area of the cheek. Let us consider in the first place the treatment of a tumour occupying a central position which has not yet involved the angle of the mouth, and has so far not

FIG. 1.



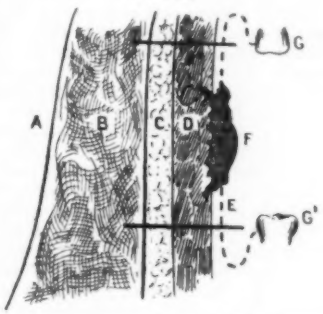
The small circle indicates position of tumour; the large circle shows extent of tissue removed. The facial artery and vein are excised between ligatures. (Semi-diagrammatic.)

spread to the upper or lower alveolus. In such a case excision with the knife may be practised, but I believe that all cancers affecting the mouth and pharynx are preferably treated by diathermy. Diathermy of the cheek presents special difficulties. It is quite easy, by employing the diathermy-excision method, to keep well wide of the margin of the growth, but it is extremely difficult to destroy the deep portions of the tumour without jeopardising the skin of the cheek. It must be remembered that the cheek increases somewhat rapidly in thickness as it passes backwards from the angle of the mouth to the anterior border of the ascending ramus of the jaw, and that if diathermy be employed destruction of the skin is more likely to occur the nearer we approach the angle of the mouth. I have treated a number of cases by diathermy but the results have been unsatisfactory, no case having remained without recurrence for more than two years.

Recently I have devised a technique which I consider will be followed by better results.

After the usual preliminaries, which include removal of all septic teeth, the following method is adopted. Under chloroform anæsthesia an incision is made through the skin. It commences just below the attachment of the auricle and runs down the posterior border of the ascending ramus of the jaw as far as its angle. It is then carried forwards

FIG. 2.



The portion between the thick transverse lines is removed at operation. A = Skin. B = Gauze packing. C = Fat. D = Muscle. E = Mucous membrane. F = Tumour. G = Teeth. (Diagrammatic.)

FIG. 3.

Condition of tissues after operation is completed. A = Skin.

along the lower margin of the jaw as far as the symphysis. In making the posterior part of the incision it is important to avoid wounding the parotid gland which lies near the surface. The skin, and the skin only, is reflected in an upward direction well beyond what are considered to be the limits of the growth. The facial artery and vein are now exposed and ligatured as they cross the lower margin of the mandible. These structures are next dissected upwards and from an inch to one and a half inches of both artery and vein are resected. A broad strip of ribbon gauze is packed underneath the skin flap so that it is well removed from the underlying tissues of the cheek. The patient's mouth is widely opened with a gag, and from the inside the growth, together with an adequate margin of healthy tissue, is removed with the diathermy knife or saw. The gauze packing, having served the purpose of protecting the skin flap from the action of the diathermy terminal, is now removed. It will be observed that there is a large hole in the cheek caused by the removal of the tumour. The skin flap is turned down and stitched in position. There has been no tendency to sloughing of the skin in the two cases in which I have performed this operation.

In cases where the periosteum of the upper or lower jaws is affected, further diathermy will be necessary before replacing the flap, and this can be best carried out through the opening in the cheek with the button applicator. Where the disease extends backwards and involves the mucous membrane over the ascending ramus, diathermy must be freely applied in this neighbourhood. In some cases it may be deemed advisable to resect a portion of the ascending ramus itself. In cases where the growth approaches the angle of the mouth it may be necessary to remove by ordinary cutting methods a part of the whole thickness of the cheek including the skin, the posterior portion of the tumour being treated by diathermy. At the end of the operation the parts are brought together by sutures. In carcinoma of the cheek the glands are seldom affected until late in the disease. Where they are involved, removal must be undertaken by the ordinary method of dissection.

The *after-treatment* of these cases is rather important, as there is, of course, a tendency to contraction and limitation in opening the mouth. It is, therefore, necessary as soon as the skin wound is soundly healed periodically to employ means which will cause stretching of the cheek. The patient may wear a prop during part of the day between the teeth or gums, and it may be desirable forcibly to open the mouth on one or more occasions under gas anæsthesia.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT EDINBURGH.

(*Concluded from p. 663.*)

SECTION OF TUBERCULOSIS.

THIS Section, which met on Friday, July 22nd, under the presidency of Dr. S. VERE PEARSON (Mundesley), discussed three large topics.

Radiology and Diagnosis of Intrathoracic Tuberculosis.

The opening paper giving the specialist's viewpoint was read by Mr. H. MORRISTON DAVIES (Vale of Clwyd Sanatorium), who pointed out that the diagnosis of pulmonary tuberculosis was not merely a matter of recognising the presence of the disease, although both the recognition of it and the differential diagnosis were of great importance and often a matter of great difficulty. Diagnosis must necessarily include the character as well as the type of disease. They must know, for example, whether it was acute miliary, acute pneumonic, acute ulcerative, or chronic; to what extent the changes due to the tubercle bacillus predominated, or were complicated or overshadowed by those due to the secondary organisms; and what part was played by the mechanical changes. It was also imperative to know the anatomical extent of the lesions, especially when there was any question of surgical intervention.

The symptoms and signs of the disease varied in every case, some cases showing but one symptom, such as lassitude or hæmorrhage, and no sign other than harsh breath sounds. Symptoms such as cough and sputum might be absent for years from the clinical picture, while pyrexia might be an early or a late manifestation. Physical signs might be difficult both to ascertain and to interpret. Some patients seemed incapable of using their chest or diaphragm so as to make even the normal breath sounds audible through the stethoscope, other difficulties being that there was practically no symptom and no sign that could not be produced at one time or another by long intrathoracic disease, and that breath sounds could be heard through even a considerable layer of fluid. It was important, therefore, in all cases to check, control, and correct the clinical findings by the radiological ones. Although clinical examination was the most important of all methods of investigation, there was much that could only be revealed by radiology, more especially in cases in which the pleural cavity was the seat of the lesion or in which it was involved secondarily to the disease in the lung. Radiology had taught them a great deal about pulmonary tuberculosis; it had corrected the belief that used to be held that tuberculosis started most commonly at the apex of the lung; it had taught them the limitations of the movements of the domes of the diaphragm; it had shown them how frequently the disease was more extensive than was suggested by the clinical findings, and, conversely, how occasionally the disease was much more limited than was suspected, owing to the widespread changes in the physical signs caused by local changes in the larger bronchi. Unfortunately, radiology had also to some extent confused them by demonstrating the shadows known as "pleural rings" and those changes at the root of the lung which had given birth to the term "hilum tuberculosis."

The cases that came before them for diagnosis belonged to two groups: the one with few symptoms, in which the existence of pulmonary disease had to be determined, and the group with well-marked symptoms and signs, in which the character of the disease had to be diagnosed. The great majority of the first group consisted of children and young adults, and the commonest symptoms were cough, which had persisted since a cold or an acute specific illness (especially measles and whooping-cough), lassitude, poor development, and dyspnœa. Occasionally in the more advanced cases there was cyanosis. The physical signs usually consisted of impaired resonance, deficient air entry, and some moist sounds. A number of these cases were labelled hilum (or pulmonary) tuberculosis, some being treated as such and bearing the stigma for the rest of their lives. It was here that radiology, with increasing knowledge, would prove of immense benefit. The great difficulty lay in the inability to establish just when the hilum shadow ceased to be normal, and what were the characteristics of early disease as opposed to chronic irritation. It was well known that an impure atmosphere led to increase in density in shadows, that chronic irritation caused enlargement of glands and increased striation, and that in some cases, especially after bronchitis, broncho-pneumonia, and in association with chronically enlarged tonsils, such changes might be very striking. Two things had struck him in X raying a large number of apparently healthy medical students 16 years ago: the enormous variations that occurred in the so-called normal subject (only one of the students had subsequently developed tuberculosis, and his original radiogram had shown nothing striking); and the fact that the traction of the heart to the left with a normal-looking lung and pleura was invariably due to a basal pneumonia in the past. He agreed with Dr. Agassiz that radiology was of the utmost importance in differentiating a non-tuberculous fibrosis from other affections of the lungs. He himself had had many cases sent to him as suffering from pulmonary tuberculosis who were suffering from some other disease—in a large proportion of cases from bronchiectasis. In the majority of these cases radiological examination would settle the diagnosis, although there were some very old-standing cases where the secondary bronchiectatic changes associated with chronic bronchitis were so predominant that it was hard to differentiate between them and a non-tuberculous bronchiectasis. A less frequent mistake was to label cases of malignant disease and of syphilis as cases of tuberculosis. In most of these cases an X ray photograph would have obviated the error. When they turned to the pleural and mediastinal cases the importance of radiology became even greater. An interlobar effusion might be suspected, but it was rarely more than a guess until confirmed by the X rays, while the difficulty was even greater in cases of mediastinal effusion. In the diagnosis of activity of a tuberculous lesion it was the clinical signs and not radiology which had to be relied on, though information could also be obtained from the latter source also. The snow-flake fluffy shadow of an acute lesion was in striking contrast to the denser, sharply defined outline of the fibrotic lesion. At times there was a great temptation to diagnose on clinical examination the presence of a cavity when the radiogram showed that the signs were due to a dense area of fibrosis contiguous with a large bronchus. Occasionally the radiogram would reveal a cavity in the centre of a densely fibrotic area which was unsuspected from clinical examination. The X rays would, moreover, reveal in a large cavity the efficiency or otherwise of such a cavity, and any retained products that might be present. When the case under investigation was one with an effusion or pneumothorax, or a combination of the two, it might be impossible to obtain by clinical examination any idea of the extent of the collapse or the character of the collapsed part of the lung. If on examination a patient was found to have a pleural effusion, it was not sufficient to be content with that as a diagnosis; it was necessary to know the cause of the effusion. It might be failing heart or kidney, trauma, suppuration above or below the diaphragm, an infection, or granuloma inside the pleural cavity or in the lung. It might be secondary to an inflammatory lesion, such as pneumonia, or to carcinoma. It might be primary tuberculosis of the pleura, or secondary to pulmonary tuberculosis. The diagnosis might be easy or it might be extremely difficult, especially if the primary lesion was in a collapsed lung surrounded by liquid. But if the liquid was replaced by air and the collapsed lung partially re-expanded, it became possible, by

radiology, to see the character of the lesion which was primarily responsible.

Precision in diagnosis was essential for determining prognosis and treatment; it was absolutely imperative before any surgical treatment could be considered. To attempt treatment of a case of pulmonary tuberculosis by operative intervention without the most thorough radiological as well as clinical examination was to make the patient run a serious risk. In those cases it was not so much the precise condition of the more affected side, but the character and extent of the lesion in the sound lung which was so important. The value of a radiogram lay in its clarity and in their power to interpret it. An indifferent radiogram might be not only worthless but a source of danger, as they might fail to detect the existence of important lesions, and act on the erroneous idea that they were not present.

The question of the interpretation of the film brought them to one of the most difficult problems. The radiologist who handled hundreds of films could detect abnormalities and describe the shadows far better than the average medical man, but his opportunities for studying the radiogram and the clinical picture side by side and following the development of the case were limited. The physician who specialised in pleuro-pulmonary diseases had very great experience, but it was possibly somewhat less than that of the radiologist, while he was also less aware of the allowance to be made for imperfect exposure or development. He had, however, the advantage of his knowledge of the clinical side. The general practitioner, with the wide range of knowledge required of him, could not be expected to have a thorough understanding of the interpretation of radiograms, and he should, in all obscure cases, call in a specialist or consultant and a radiologist. A frequent cause of delay before patients applied for sanatorium treatment was wrong diagnosis, and in order to obviate this he urged that an invariable rule should be made that when there had been persistence for more than three months of symptoms which might be due to tuberculosis, any sputum present should be examined and a radiogram taken.

Dr. E. RIST (Paris), who followed, emphasised the importance of X rays in correcting physical signs. This was best seen in cases in which there was a deep-seated cavity near the hilum, but even superficial cavities were sometimes absolutely silent to the stethoscope. In pneumothorax work X rays were often helpful in deciding whether the signs heard in the less affected lung were an indication that it, too, was affected, or whether the sounds were merely transmitted from the worse lung. Dr. Rist thought that many cases suitable for pneumothorax had not had the benefit of this treatment owing to the failure of the physician to make use of X rays to assist him on this point. He concluded with a plea for more X ray screen examinations, which had the advantage of showing movement, and should always precede the taking of a film. No chest could now be said to have been properly examined unless a screen examination had been made. Objections on the ground of expense should be met by the reply that there was a time when physicians said they could not afford stethoscopes.

Dr. J. LOGAN STEWART (Manchester) considered that the term "hilum tuberculosis" was far too widely used. It should be dropped as misleading in all cases in which lung tissue was affected; and where the disease was confined to bronchial glands the appropriate name should be used. He showed a number of slides to illustrate the various types of case in which an increase of the hilar shadows was noted. A sharp distinction was drawn between cases in which the adjacent lung was infiltrated and those in which it was not. In the latter class plates were shown in which the heavy shadows were due to pleural thickening over the root of the lung, to interlobar pleurisy, and to vascular congestion in cases of mitral disease.

Dr. J. M. WOODBURN MORISON (Edinburgh), speaking as a radiologist with experience of general practice, considered X rays to be an integral part of the physical examination. A diagnosis on the strength of an X ray examination alone should, however, never be made; and the custom adopted by some specialists of sending a patient to a radiologist with a card marked "X ray of chest, please," was not to be recommended. To illustrate this point three slides were shown, in all of which a very similar picture was given, but which were taken from cases of hydro-pneumothorax, subphrenic abscess, and diaphragmatic hernia.

Dr. C. P. LAPAGE (Manchester) considered fibrosis of the root of the lung to be a common condition in childhood; in these cases the most important function of the physician was to determine whether or not the disease was active. The speaker looked upon loss of tone of the skin between the scapulæ as a useful indication of toxæmia in these cases.

Dr. L. D. PARSONS (Ceylon) advocated the use of tuberculin tests in the diagnosis of early tuberculosis.

Mr. DAVIES, winding up the discussion, agreed with Dr. Rist as to the importance of fluoroscopy, and with Dr. Morison that all doctors engaged in chest work should have some knowledge of radiology. He feared, however, that too much emphasis on X ray signs might result in the neglect of the more important clinical side, which should always come first.

Pathology of the Tuberculosis of Childhood.

Prof. EUGENE L. OPIE began by discussing the question of latent tuberculosis. By this term he did not mean that the disease was dormant or arrested, but merely that it gave no symptoms or signs which could be detected by patient or physician. A comparison was made between latent and open tuberculosis on the one hand and uncomplicated measles and measles followed by pneumonia on the other—a striking illustration of the importance of early diagnosis and treatment. Attention was called to the fact that in children the disease progressed more in the lymphatic glands than in the lung parenchyma. Although bronchial gland tuberculosis was often associated with infection of the lung tissue adjacent, a primary focus could usually be found in the part of the lung drained by the affected gland. Prof. Opie also recalled the fact that when there was a focal lesion of the lung the mesenteric glands were rarely affected, and vice versa, and referred to the curious and inexplicable way in which adult phthisis tended to affect the apex of the lung, in which respect it was in sharp contrast with childhood tuberculosis and animal tuberculosis. Although the adult lesion tended to be chronic it remained confined to the lung for a long time, and for some unexplained reason the lymph glands were usually unaffected. The speaker ended by giving some statistics to illustrate the high incidence of latent tuberculosis in the children of tuberculous parents.

Dr. R. G. CANTI (London) discussed some of the theories as to the path of infection in tuberculosis, based on his observations in more than eighty autopsies on children suffering from intrathoracic tuberculosis. He considered mediastinal infection to be almost invariably secondary to a pulmonary focus, the following reasons being given in support of this view: (1) the glands were involved whenever there was tubercle of the lung; (2) when the glands were affected a focus could usually be found in the lung; (3) the glands which were involved were those which might be expected to be so if the pulmonary focus were primary. The path of infection through the mesenteric glands to the lung was unlikely because these glands were rarely affected in lung cases. The suggestion that bacilli of human type passed through the glands and affected the lung was not tenable, because these glands were just as easily affected by the human as by the bovine bacillus.

Dr. P. F. ARMAND-DELILLE (Paris) showed an interesting series of post-mortem specimens and compared them with X ray plates of the same cases taken a few days before death. The accuracy of the comparison was increased by the speaker's method of hardening the inflated lung in a cast of the chest wall

before cutting sections. The chief point brought out by these observations was that only a small part of the periphery of the hilar region was visible on the X ray plate, the greater part being hidden by the heart. Prof. Opie, in replying, referred to the unexpected opposition to the views he had expressed as to the pulmonary origin of bronchial gland tuberculosis, and recalled that Parrot and Kuss had both described these primary foci before Ghon, and their work had been acknowledged by him.

Interrelation of Physician and Surgeon in Non-pulmonary Tuberculosis.

DR. D. A. POWELL (Cardiff) opened the third discussion. In non-pulmonary as in pulmonary tuberculosis, he said, the physician and surgeon should be one and the same individual for all purposes of diagnosis and treatment, except those involving major operations or a few highly technical procedures. The tuberculosis officer, to attain this end, should seize every opportunity to train himself to become a competent surgeon, first, by looking upon a period of residence in a surgical tuberculosis or orthopædic hospital as quite as essential a part of his training as residence in a chest hospital or sanatorium; and, secondly, by close linking up of his area surgical work with that of an institution, frequent reciprocal visits and interchange of medical staff being an essential part of the scheme. The speaker believed that in this way the present unfortunate tendency to divorce the conception of tuberculosis of bones and joints from general tuberculosis would be checked. Tuberculosis, whatever its site, was the same pathological process, diagnosed by the same procedures, and treated on the same principles; and he urged that the mere utilisation of methods of treatment similar to those of orthopædics should not blind them to the fact that the essential element in the successful management of cases was a sound knowledge of the disease as a whole, fortified by manual dexterity and reinforced when required by the operative skill and expert knowledge of the general or orthopædic surgeon. Among the definite advantages that would accrue if this unification or closer interrelation could be carried out would be the addition of some much-needed precision to their diagnostic criteria, especially in tuberculosis of glands, and their recommendations for treatment would be based on fact rather than on prophecy. By refraining from making up their minds as to the diagnosis until there was a practical certainty about it, they would obviate, in a large proportion of cases, the mental trauma they so lightly inflicted upon their patients to-day, and would avoid the finality of notification with its consequences. The speaker took, as an instance, tuberculous glands, and pointed out that if the tuberculosis officer or his residential colleague became the surgeon oftener and earlier and excised doubtful glands for examination, their ideas as to the distinction between tuberculous and non-tuberculous glands would be clarified, and they would also realise more clearly that although it was broadly true that a tuberculous lesion was the local manifestation of a general infection, yet that in cervical adenitis both lesion and infection might be localised, accessible, and suitable for eradication.

Few problems in medicine required nicer judgment or greater patience than to decide in bone and joint cases when the disease was quiescent and treatment could be altered, or when the disease was arrested and treatment could be discontinued. In early lung involvement the issue was usually clear-cut—namely, the presence or absence of tuberculosis; in non-pulmonary tuberculosis this issue was complicated by the necessity in addition of differentiating between tuberculosis and a number of conditions which might closely simulate it. As a general rule, tuberculosis officers should content themselves with a provisional diagnosis and *act upon it*. Until tuberculosis officers were physicians and surgeons too they must follow up a preliminary, provisional, or approximate diagnosis by such action as requiring the attendance of the patient at a clinic or his admission to hospital, where the differential diagnosis could be elucidated without detriment to the patient, and where treatment could be initiated without loss of time. By a closer coöperation or unification there would be, among other advantages, a more general recognition of the fact that in associated pulmonary and non-pulmonary disease premature success in arresting the local lesion (especially if the former were the primary manifestation) might even activate or reactivate the trouble in the lung. It would be remembered also that, while the development of secondary deformities was a reproach, caution in attempts at preventing or correcting the primary deformity might not be too high a price to pay for life. The surgeon's association with the tuberculosis officer would enable him to realise more vividly the economic repercussion in adult patients of his occasionally too conservative methods in some lesions of the lower limb. He would also realise that after-care in tuberculosis, as opposed to orthopædics, was more than a medical problem, and connoted much more than the correct use of appliances; that failure was not necessarily due to indifference or carelessness, but to those social and economic disabilities that exerted such a profound effect upon the prognosis of tuberculosis in any form.

Prof. JOHN FRASER (Edinburgh) said that the treatment of tuberculosis might be considered under five headings: (1) excision of the lesion; (2) stimulation of the organism by general treatment; (3) rest—the basis of all treatment; (4) chemotherapy, from which nothing of proved value had resulted; (5) tuberculin. This last was criticised in that it caused an increase in the blood-supply to the affected part, whereas Nature's way of healing involved a diminution of blood-supply, following endarteritis obliterans. Prof. Fraser summed up by saying that if the part were put at rest, Nature would supply the fibrous tissue.

Mr. G. H. GIRDLESTONE (Oxford) deprecated the tendency for the tuberculous cripple to be separated from other cripples, and advocated a national scheme to deal with all bone and joint cases requiring hospital observation and treatment. He considered that there was danger of the non-tuberculous cripple being overlooked unless he was treated by the same organisation that was caring for the tuberculous cases. Far from being an appendage of orthopædics, the tuberculous cases formed the majority of those treated in orthopædic hospitals.

In his reply Dr. POWELL stated that he favoured coöperation rather than amalgamation in the treatment of tuberculous and non-tuberculous cripples.

In the afternoon Dr. ARMAND-DELILLE and Prof. OPIE each showed a series of slides to illustrate the papers they had read in the morning.

SECTION OF TROPICAL DISEASES.

WEDNESDAY, JULY 20TH.

ABOUT 85 persons were present on Wednesday, July 20th, when the President, Dr. ANDREW BALFOUR, opened the Section and recalled that on the last occasion on which the Association met in Edinburgh Sir Patrick Manson announced Sir Ronald Ross's discoveries regarding malaria, and reminded his hearers that those discoveries marked the beginning of a new era in tropical medicine.

Recent Advances in the Treatment of Amœbic Dysentery.

Dr. P. H. MANSON-BAHR (London), who read a paper by himself and Dr. E. G. SAYERS, said that ipecacuanha powder by the mouth and emetine injections had both been found unsatisfactory as a means of eradicating amœbic infection, but the use of emetine-bismuth-iodide, in powder form in gelatin capsules, had proved a distinct step forward. For lasting results a dosage of 36 gr. spread over 12 nights was required along with dietetic restrictions. He quoted some striking cases where this treatment had brought about permanent cure, and as a general rule the more acute the symptoms the more satisfactory and

lasting were the results. Out of 40 cases treated in the last seven years there were five in which the drug had not effected permanent cure. Results from the use of emetine periodide (12 g. per diem) during the same period were less favourable, 5 out of 12 so treated having relapsed almost immediately. The introduction of yatren marked a further advance. This compound of oxyquinoline-sulphonic acid and iodine could be given by the mouth in doses of 24 gr. daily, or could be injected into the rectum in a strength of 2¼ per cent. A study of four acute cases treated by this drug showed that it brought about rapid improvement in the patients' symptoms, but did not always eradicate the infection. The experiences described led to the conclusion that in the combination of yatren and emetine-bismuth-iodide (E.B.I.) there lay the greatest possibilities of rapid alleviation and permanent cure. The E.B.I. is given by the mouth in 3 gr. doses for ten nights while by day the patient receives the yatren solution into the rectum. A combination of these two drugs was particularly well tolerated, so that it has been possible to record a series of 22 cases, many of them most intractable and resistant, successfully treated without, as yet, any relapse, although the series included no case which had not been observed over a period of nine months since the cessation of treatment.

In a series of water-colour illustrations (presented by epidiascope) Dr. Manson-Bahr demonstrated the appearances of various amœbic lesions as observed through the sigmoidoscope and the effects of various treatments upon the lesions. The most acute lesions rapidly subsided and healed so that, after ten days of treatment, all that could be observed were small pits or depressions to mark the site of former lesions. These depressions, often microscopic in size, were also seen in "carrier cases" and in the latent or chronic forms of the disease.

Prof. CHARLES A. KOFOID (California) said that laboratory findings in over 4000 cases of infection by *Entamœba histolytica* during the past nine years confirmed the greater efficiency of E.B.I. and emetine periodide as compared with emetine, yatren, and stovarsol; the last two were reported to be useful as adjuvants although neo-arsphenamine was replacing stovarsol with advantage. To establish a negative diagnosis examination of repeated series of six consecutive stools was necessary. He relied for diagnosis primarily upon the finding of cysts and the nuclear structure of matured cysts; and some difficulty might be met in distinguishing between the motile phases of *E. histolytica* and those of other amœbæ found in human stools. He had been observing an amœba, found in stools, which resembled the largest "race" of *E. histolytica*, and was generally present in the 4-nucleate stage in stools, and had clear pseudopodia in the motile phase. Nearly 100 cases of this infection had been observed among 2578 persons examined. In culture this amœba had maintained its characteristic morphology and behaviour, in one instance for over a year. The characteristics were sharp distinction between clear ectoplasm and granular endoplasm; cysts with 1, 2, 4, and occasionally 8 nuclei; freedom in budding in fresh stools, and, most diagnostic, a single large lateral blob of peripheral chromatin on the nuclear membrane, and the presence of eight chromosomes at nuclear division. The name *Councilmania dissimilis* had been given to this amœba, whose pathogenicity or harmlessness was as yet uncertain.

A paper embodying their investigations was presented by Prof. WARRINGTON YORKE and Dr. A. R. D. ADAMS (Liverpool).

Life-history of Entamœba Histolytica.

In their work they found that cysts of *E. histolytica* develop and hatch under suitable conditions in vitro; moisture and a temperature of about 37° C. were essential for excystation, but the passage of cysts through liquor pepticus or liquor pancreaticus was unnecessary for that purpose. They had devised a method of preparing, from fæces, washed concentrated suspensions of cysts. When such suspensions were inoculated on Locke egg-serum medium the youngest cysts were found to be uninucleate and loaded with glycogen. With development chromatoid bodies appeared, nuclei divided, and glycogen decreased. These processes continued and when the cyst was completely mature and ready to excyst the nuclei were agglomerated, cytoplasm homogeneous and without glycogen, and the chromatoid bodies greatly reduced or absent. They had observed no evidence of autogamy in cyst development, but frequently had seen chromatin particles apparently extruded from nuclei immediately prior to or during division. The freshly excysted *E. histolytica* contained four closely agglomerated nuclei, and the cytoplasm was very firmly alveolar. Its movement was characteristically slug-like, nuclei almost invariably anterior, and a more or less motionless tail was dragged behind. In cultures most 4-nucleate excysted amœbæ divided, directly or indirectly into four uninucleate individuals, but sometimes multinucleate individuals are formed.

They could not confirm Dobell and Laidlaw's statement that recently passed cysts did not hatch or develop further until cooled outside the body for one or two days; nor the same workers' statement that immature cysts are killed by cooling outside the body. In their experience cooling cysts for periods up to one or two days had no appreciable effect and was unnecessary for further development and excystation. They found the cysts to be killed within five minutes by a temperature of 50° C.; to be resistant to emetine and yatren, and relatively so to hydrochloric acid and chlorine, but they were quickly destroyed by phenol disinfectants, formalin, and perchloride. The cysts survived only 7–10 days in fæces at laboratory temperature and only slightly longer at 0° C.; even when washed free from fæces and stored at 0° C. they survived only two or three weeks.

The life of the cysts in man's intestine was short; development from precystic stage to mature quadrinucleate cyst proceeded rapidly and steadily, and was complete in a few hours. This explained the fact that cysts passed by the same person at different times were often at varied stages of development. Mature cysts probably died if they did not escape from the bowel in, at most, 48 hours. Excystation did not take place in fæces or in extracts of fæces in Locke serum in vitro. From this fact and because prolonged search has failed to reveal typical excysted amœbæ in stools, they concluded that excystation of *E. histolytica* cysts did not take place in the bowel in which they were formed, and that the hypothesis of Sellards and Theiler, that relapses in amœbic dysentery may partly be due to excystation of cysts long stored in the bowel was incorrect.

Problems of Malaria Prophylaxis.

To introduce this discussion copies were distributed of an article by R. Hegner setting out 40 points with regard to malaria in which knowledge is lacking or incomplete. In opening the discussion Lieut.-Colonel S. P. JAMES (Ministry of Health) based his remarks on the findings of the Malaria Commission of the League of Nations, published in that Commission's second report, in the drawing up of which Colonel James assisted. He said that two limitations applied to the recommendations of that report; first, they were applicable to European countries; and, secondly, to countries who could undertake only a moderate expenditure. As a rule the Commission's recommendations represented a compromise, the various members endeavouring to arrive at what might be called the "average opinion." In his view present knowledge and resources rendered it necessary to restrict the aim to "scotching of the enemy"; eradication was as yet unattainable. The Commission had laid stress upon the fact, often overlooked, that there are methods of dealing with malaria which have proved effective apart altogether from the knowledge of the transmission of the disease by mosquitoes, and there was no one method of malaria control which could be described as superior to all others, and therefore to be universally adopted. Malaria control

was essentially a *local problem* requiring preliminary local examination before plans were framed. The Commission considered that it was advisable to limit the methods adopted to one or two well-tried operations rather than to put in action simultaneously a large number of methods reported successful elsewhere. Malaria control measures were often classified as direct and indirect, and the Commission had employed the term direct in a very strict sense—namely, as properly applying only to the killing of the plasmodium either in man or in the mosquito. General antilarval measures were classed as indirect. Certain direct methods were called "primary measures," were concerned with infected persons and the interior of their dwellings, and were indispensable. Treatment of cases, adequate and gratuitous provision of quinine, and arrangements for diagnosis were of first importance; inspection of school-children, following-up of patients to their homes and house-to-house inquiries might be undertaken by duly qualified health visitors. The Commission also recommended as a "primary measure" the systematic killing of adult female anopheles in the interior of dwellings; it was preferable that householders themselves should be educated to undertake this duty. Regarding places where the economic position and social status of the people made these primary measures impossible, nothing save the free distribution of quinine could be attempted until permanent settlement of the land and a fair standard of housing and living had been brought about. It was striking that on some plantations extensive drainage and antilarval works had been undertaken without lessening of malaria among the labourers, who continued to be badly paid and poorly housed. The terms "bonification" and "assainissement" were often misunderstood. The benefit of drainage was often through improved agricultural and economic conditions rather than through reduction of mosquito breeding-places. The continuing of scientific research was most important. The Commission recommended stations for epidemiological observations over a number of years, and laboratories (in countries employing malaria therapeutically) where pure strains of malaria might be cultivated in mosquitoes. Such laboratories established in organised hospitals would provide opportunity to study clinical and parasitological features of malaria and the action of quinine and other drugs which might be introduced.

Lieut.-Colonel E. D. W. GREIG (Edinburgh) described his study of 18 cases of intentionally induced malaria. Well-marked differences of individual susceptibility were observed; if a practical test for the detection of degree of susceptibility could be devised it would assist in prophylaxis. He outlined the problems which present themselves in connexion with the latency (incubation period) of malaria, the time of appearance of sexual forms of the plasmodium, and the uncertainty whether the malaria parasite produces a toxin, and illustrated his remarks by lantern slides of temperature charts.

Dr. MANSON-BAHR gave an account of his employment of plasmochin and plasmochin compound in treatment of malaria. The selective action of this drug for the sexual forms of the parasite made it valuable for prevention of spread of the disease.

Prof. MARTINI (Hamburg) thought there was a danger that Governments would interpret the Malaria Commission's report as sanction for their doing nothing but provide quinine. He leant towards the employment of thorough antilarval measures. He gave an account of his malaria studies in South Russia and Asia Minor, and stated his opinion that cases of so-called spring malaria are nearly always relapses of infections of the previous autumn. He had successfully based his plans for personal prophylaxis in this belief, neglecting precautions in the spring-time.

Dr. L. W. HACKETT (Rome) gave interesting particulars of the use of Paris green as a larvicide in the work of the International Health Board in Italy.

Dr. DRBOHLAV told of malaria in Czecho-Slovakia, and Colonel JAMES summed up the discussion and replied to some questions.

SECTION OF THE HISTORY OF MEDICINE.

AT the first meeting of this new Section, held on July 22nd, the President, Dr. J. D. COMRIE (Edinburgh), hoped that the chief aim would be to treat the history of medicine as a subject of living interest. He was strongly of opinion that it should form part of the medical curriculum.

The Evolution of Disease.

Sir HUMPHRY ROLLESTON (Cambridge), opening a discussion on this subject, said that W. P. Alison was convinced of a change in the types of disease in the course of the first 30 years of the nineteenth century, but the supposed change from sthenic to asthenic type was attributed emphatically by Hughes Bennett to the effect of treatment rather than to any inherent alteration in disease. The science of palæopathology, by the study of morbid anatomy in the fossil remains of man and animals of 500,000 years ago, notably the work of R. L. Moodie in America and of M. A. Ruffer Fouquet, Elliot Smith, and Wood Jones in the investigation of mummies in Egypt, had yielded a considerable amount of valuable information as to the existence in ancient times of conditions of modern disease, recognisable even at great lengths of time. These included arteriosclerosis, rheumatoid arthritis, gout, pyorrhœa, hydrocephalus, pneumonia, anthracosis, cirrhosis of the liver, and peri-appendicular adhesions. Achondroplasia was not uncommon in ancient times, for, besides the skeleton remains of achondroplasics (e.g., in the Tomb of Senab, 2900 B.C.), mural paintings and sculptures of 5000 years ago showed evidence of the disease in figures of the Egyptian gods, Ptah and Bes, and in those of the dwarfs of ancient Egypt, chiefly among males, as also, at a much later date, did figures of court attendants in paintings by Velasquez and others. The pigmies, regarded by Pierre Marie as achondroplasic, were not really so, but were probably as much a racial variation in ancient times as those now known in the forests of Central Africa. Pott's disease of the spine and steatopygia, a gluteal overgrowth of the adipose tissue, as in the Hottentot Venus, had also been reproduced in statuettes by the Egyptian sculptor. Berkeley Moynihan had recognised in a bust done of Alexander the Great in his fatal illness the manifestations of cerebro-spinal fever. It had been possible to identify rickets as well as achondroplasia in remains from Herculaneum and Pompeii, but no evidence of rickets had been found in Ancient Egypt, nor of authenticated syphilis as had been claimed, for Elliot Smith had shown that the supposed syphilitic bone changes were due to the erosion of human remains by beetles, long after burial.

Tuberculosis had been recognised in Egyptian mummies, and in the pulmonary form was probably common also in ancient Greece, where also mumps was apparently definitely known, and with its complication, orchitis, had been described by Hippocrates. Ancient votive offerings of patients seeking cure from their deities showed attempts at reproducing their particular complaint. Although certain conditions of disease were not known to the medical profession till a much later date, their existence long previously had been portrayed by old artists, as example, the portrait of Frederick I. of Prussia by Lucas Van Leyden in 1521, reproduced by Semon, which showed the typical adenoid facies; yet it was only in 1868 that William Meyer, of Copenhagen, first described adenoids to the profession. The dancing mania prevalent in the fourteenth to the sixteenth centuries and variously called the dance of St. Guy, St. John, St. Anthony, and St. Vitus, had been identified from old relics, and in Raphael's paintings, as hystero-epilepsy. From the written records of diseases occurring in the past—e.g., leprosy and hydrophobia—though far more numerous than pictures and drawings, it was more difficult to recognise their true character and to decide as to a change in type, as the description possibly covered more than one disease occurring at the same time. The designation "lepra" probably

included not only true leprosy, but also pellagra, lupus, syphilitic, and other skin lesions.

Disease was the reaction of a complex organism to various influences, and the changes in social conditions brought about by famine, war, and overcrowding had more effect on the spread and type of acute than chronic disease, but alterations of the former were more difficult to determine. The change from the cave man to the club man was a very considerable one, spread over a period of ages, whereas the transformation of lowly organisms occurred with far greater rapidity than in the higher animals. It was probable that alterations in the virus were of more importance in bringing about a changed type of disease than alterations in the host. Small-pox and scarlet fever provided examples of changes in the virus resulting in asthenic types of those diseases, as common at the present day. Alteration in the character of the soil and seed might bring about a new disease, or be responsible for the waxing and waning of the original manifestations of a disease, which at the present day had led to so much separation and differentiation of the various types of infection. In the case of typhus, probably the famine fever of ancient Greece, and not till the nineteenth century differentiated from typhoid fever, was it possible that typhoid and paratyphoid fevers had been originally evolved from it, although now clearly recognised as distinct? Chicken-pox and vaccinia might reasonably be regarded as belonging to the same stock as small-pox, yet their differentiation had become essential, and even alastrim, modified or para-smallpox, was held by some to be an entirely separate disease from true small-pox, which until Sydenham's time was confused with hæmorrhagic measles. There was, however, evidence as far back as 1100 B.C. of an eruption like small-pox, which had been identified in an Egyptian mummy of that period.

The influence also of secondary infections on the type of disease had caused much confusion as to the primary cause. Particularly was this the case with influenza, in which the hæmolytic streptococcus had played so important a part in recent epidemics. The evolution of the streptococcus was possibly correlated with the variety in the types of streptococcal infection recognised at the present day, and its presence as a secondary infection had been held by some to account for the severe form of small-pox. Influenza had been claimed by Sir W. Hamer, F. G. Crookshank, and J. T. C. Nash to have occurred in the past under the name of sweating sickness, and again in Picardy in 1886. No fewer than 194 epidemics had been recorded by Hirsch in France between 1714 and 1874, as compared with only five in England in the fifteenth and sixteenth centuries. Chantemesse held that these outbreaks were distinct from true influenza, contrary to Hamer's opinion, which embraced also cerebro-spinal fever, encephalitis lethargica, and dengue as influenzal manifestations. The spread of disease had been productive of great national crises; for example, to the prevalence of malaria had been attributed the decadence of Greece and Rome. The clinical resemblances of the disease, past and present, as derived from contemporary literature, left little doubt that malaria was prevalent in Greece from the fourth century B.C. and in Italy from 200 B.C.

Bubonic plague was a disease which may have been known well before the Christian era. It was conjectured to have attacked the Philistines severely after their capture from the Israelites of the Ark of the Covenant, and was probably symbolised in the gold offerings (representing the tumours or emerods from which survivors had suffered, and the mice, as supposed carriers of infection) which were made in propitiation when the Ark was returned. Apart from that biblical record, the earliest reliable diagnostic account had shown plague to have appeared in Egypt, Libya, and Syria in the third century B.C. Later, in A.D. 70, Aretæus had mentioned pestilential bubo, but the history of the disease could be more confidently traced from the great plague of Justinian, which came from Egypt in A.D. 542 and overran Europe. The term "plague" had been one of wide application and it was probable that the plague of Athens, described in 430 B.C. by Thucydides and Diodorus Siculus, included diseases as widely separated as malignant scarlet fever, small-pox, and typhus. Similarly the pestilence in Rome, known as the Antonine or Long Plague of A.D. 165, of 15 years' duration, had been variously identified as dysentery, small-pox, and typhus, and was possibly a succession or conglomeration of different diseases.

The history of diphtheria had demonstrated the difficulty of distinguishing between the various severe forms of throat infection and what was now recognised as clinical diphtheria. Adami had held that the true diphtheria bacillus represented a change in type of the harmless diphtheroid variety, and that the transformation had shortly preceded Bretonneau's classic account of the disease in 1821. Appendicitis, so common at the present day, could be described as a modern disease, for at the beginning of the nineteenth century Parkinson and Addison regarded it as a rare condition. Had it not been so, there was no doubt that many more people would have died from it for want of operation. However, detailed descriptions certainly existed earlier than that of Fitz, of Boston, in 1886.

It was only in the sixteenth century that gout and rheumatoid arthritis had been distinguished, yet evidence of chronic arthritis had been found in neolithic skeletons and in ancient Egypt. Jeanselme, in his study of gout in Byzantium, was of opinion that six out of 24 sultans between the fourteenth and seventeenth centuries had suffered from gout.

The incidence of aneurysm, particularly of the popliteal artery, which was known in the fifteenth century, and its relation to syphilis at that period, drew attention to the disputed origin of syphilis, whether brought from South America by the crews of Columbus' expeditions, or, as some held, long known in Europe in a mild concealed form and transferred to the virgin soil of newly discovered America, there to develop in epidemic and virulent form. The Great War, however, had shown the importance of trauma as the chief cause of popliteal aneurysm, although now become a rarity, possibly attributable to changes in occupation, riding having been largely replaced by motoring.

Dr. G. M. CULLEN (Edinburgh) in a paper on

World Epidemics

and their relationship in cause and effect on social conditions, referred to the too frequent perversion of history to the point of view of the propagandist and partisan. By the influence of the individual, too great significance became attached to individual ideas, resulting, in the case of one medical biographer, in concentration on one idea—e.g., that all patients were suffering from eye-strain due to mild astigmatism, or, among the followers of psycho-analysis, that every patient was afflicted with some form of insanity. It was curious to note that, on the other hand, so important a subject as the influence of great epidemics—e.g., the black death—on the history of a people or nation had been much overlooked. Even in the works of Hume and Green the aftermaths of past epidemics had received little or no notice. Now, however, those effects were being better studied, thanks to the researches of W. H. S. Jones and others on the influence of malaria on Greek history.

Dr. Cullen drew attention to the outstanding importance of three dates in the history of civilisation: (1) 430 B.C., when Greece was at the zenith of her power. A hundred years later came her decline and eclipse by the conquests of Alexander the Great. (2) A.D. 542, the Justinian period. Within a century the Arabs had ravaged the Roman empire. (3) A.D. 1348. In 1358 the Turks set foot in Gallipoli and effected the conquest of Constantinople. It was significant that each of these dates, when the respective

nations held world-wide sway, marked the development of widespread epidemics, the first, malaria, the second, plague, and the third the black death, the results of which had effectively prepared the way for conquest by loss of life and the flight of citizens from the stricken towns, which had been more marked in civilised communities. Following the depopulation caused by the black death in 1348, efforts were made to attract fresh inhabitants to the cities, which consequently rose in importance and prosperity. There followed confederations such as the Hansa league of towns, which marked the downfall of the feudal system owing to the weakened power of the nobles. The protection of the king was afforded to towns against the nobles, until power became concentrated under one rule, and by the end of the fifteenth century the kings of England, France, and Spain had become absolute monarchs. Pestilence first enlisted the labourers against the army of capitalism, and in France, for instance, led to the rising of the Jacquerie. There resulted the breaking down of social distinctions, so obviously lacking in death, and it was then the saying originated "When Adam delved and Eve span, who was then the gentleman?" The real birth of the middle-classes belonged to that period, and the rapid change of hands of unaccustomed wealth led to reckless prodigality and many alterations in social customs and dress. In no direction, perhaps, was the effect of the black death more marked than in regard to religion and in the sense of dependence on the Almighty. Moreover, the heavy mortality among priests was regarded as due to divine visitation, and it was only the survivors who were judged to have been fit to administer sacrament. Efforts to fill up the losses in the priesthood failed or attracted only those least fitted.

Dr. Cullen concluded by drawing comparison with the present-day love of pleasure and disregard of religious observance, following the Great War, and the widespread influenza epidemics. Whether these complaints were justified, it was not his duty to inquire, but to note the similarity of symptoms and their possible significance.

Industrialism and Health.

Miss M. C. BUER (Reading) contributed a paper on the effect of early industrialism of the eighteenth century on the health of the community. She drew attention to the decline in death-rates during the eighteenth century unaccompanied by change in birth-rate, as responsible for the rise in population between the years of 1750 and 1815, thus:—

	Death-rates per 1000.		Death-rates per 1000.
England and Wales	1750 .. 35	London	1750 .. 50
	1815 .. 20		1815 .. 30

Economic advance had not been at the expense of the public health. The main part of the population in the eighteenth century were living in isolated communities where the death-rate was highest. In mediæval Europe, she referred to the influence of overcrowding, polluted water-supplies, lack of sanitation, and the failure of food-supplies leading to the killing off of cattle for conversion into salted foods. The shortage of green vegetables and root crops had given rise to marked prevalence of rickets and scurvy. Reference was made to the conditions in this country from records of the seventeenth century, when the towns were hot beds of infection, and the water-supplies were polluted by the carcasses of dead animals in the conduits.

From the fifteenth century onwards there occurred the transition from an agricultural to an industrial state, and the growth of towns reacted on the extent of agriculture. The increase of vegetable culture led to a decrease of rickets and scurvy, and drainage, undertaken for cultivation, resulted in a decline in the prevalence of malaria. In the middle of the eighteenth century came the rapid growth of hospitals, and the end of the century was marked by important changes in the hygienic conditions of the army, thanks to the work of Pringle, Lidden, and Percival in their campaign against typhus, whose efforts ranked with those of Chadwick in the nineteenth century. In 1783, through the efforts of Haygarth, Leicester was first provided with a fever isolation hospital, and in 1797 similarly in Manchester a "house of recovery" was erected. At that time the campaign of cleansing dwellings with whitewash, the introduction of cotton clothing, and the substitution of iron for wood bedsteads had a combined effect on the prevalence of typhus, mainly the result of the work of Howard. Before the improvements begun in the middle of the eighteenth century, 75 per cent. of the children died before reaching the age of 5 years, but in the latter half of the century the heavy death-rate decreased following improvement in food and the rise in interest in child welfare. Lying-in hospitals were established, and the spread of knowledge showed itself in 1815 in the opening of the first baby clinic in London with instruction to mothers in infant feeding.

The change brought about in the second half of the eighteenth century was shown by the following figures from the British Lying-in Hospital—

	Maternal mortality.	Infant mortality per 1000 deliveries.
For the ten years ending 1758	.. 24	 66
" " " 1798	.. 3·5	 13

and at the Westminster Infirmary in the 30 years between 1750 and 1780, a decline in maternal mortality from 15 to 3·7 per 1000 deliveries was recorded. At the end of the eighteenth century, the death-rate, which exceeded the birth-rate up to 1820, when the reverse first showed itself, amounted to 22 per 1000 in the country districts and 30 per 1000 in the towns, and reached a higher figure earlier in the century. The earliest days of industrial evolution at the beginning of the nineteenth century, for the knowledge then existing, showed relatively greater improvement and lower mortality in comparison with the present day with its much more advanced state of education and scientific progress. As regards the correlation between economic conditions and hygiene, Miss Buer debated whether the slow rate of progress in preventive medicine and backward state of agriculture and industry in the east were merely an accidental association, or more likely, factors which were closely interdependent.

She concluded by stating her firm conviction that present-day civilisation in this country was far from effete, but intensely vital.

In the discussion following the three opening papers Prof. VAN LEERSUM (Amsterdam) referred to the uneasiness felt in Holland as to the frequency of thyroid enlargement, whether affected by the presence of traces only of iodine in the water-supplies. The fact that in the fifteenth and sixteenth centuries goitre was very common, to judge from frequent appearance in models of the period, showed that even with the improved conditions of water-supply its occurrence at the present day remained unaccounted for.

Dr. J. R. RATCLIFFE (Birmingham) was of opinion that, to obtain reliable evidence of changes in type of disease, systematic records of clinical symptoms were essential. He sought explanation of the changes shown by scarlet fever, once so serious, now merely a nuisance from the diagnostic point of view, and as to why chlorosis and anæmia had now practically disappeared, and membranous croup was no longer seen. Bacterial evolution was a question of the number of generations which succeeded each other so rapidly that a change could take place very much quicker than in the human organism, hence the possibility of change in type of disease in a relatively short space of time.

Lieut.-Col. STEPHENSON (I.M.S., retd.) dwelt on the medical interest attaching to the scientific writings of a Persian poet and historian of the thirteenth century, in a compendium of the various known minerals, plants, and animals, and the medicinal uses of each. The state of knowledge in the fourteenth century in Persia as regards disease, for instance, the accounts of what was probably diphtheria, of

quartan fever, and the distinction of gout from chronic rheumatism, argue that the east had possibly anticipated the west. That hemiplegia once fairly common in the Punjab was now rare, pointed to a decrease in arterial disease. The mention made of cataract, corneal opacity, stone, leprosy, tuberculosis, and ringworm, and their treatment, all of which were still common complaints, showed the development of medical science in a broad sense which had existed in mediæval Persia.

Dr. A. A. WARDEN (Cannes) alluded to the date of the first authentic case, confirmed by post mortem, of appendicitis in the death of Gambetta in 1881, maintained by Prof. Lannelongue to be due to appendicular abscess, for which operation was declined.

Dr. W. WRIGHT compared the conceptions of disease now known to be bacterial in origin, but attributed by the ancients to "semina," morbid influences, and "mal odeurs." All sensations were formerly ascribed to particulate matter, and the prevention of disease was confined to counteracting unpleasant effluvia by means of aromatic substances. The carrying of infection found mention in Shakespeare (Henry IV.) in reference to the filthy rags of continental immigrants bringing the semina of disease. Dr. Wright described the work of the late Dr. Charles Creighton on the history of medicine and epidemiology as a classic ranking with Gibbon's History of Rome. Appendicitis had been described by Sydenham in the reign of Charles II. under the name of the "iliac passion," the treatment advocated being the application of the warm belly of a living puppy. The earliest authentic case had been recorded by Heister, a famous Dutch surgeon in the middle of the eighteenth century, who in the course of dissection of the body of a criminal, found the appendix "beautifully injected, and lying free in the peritoneal cavity," and, moreover, stated that the appropriate treatment would have been the application of warm clysters. But for the first anatomical description of the appendix it was necessary to go back to the writings of the anatomist (Berengarius) in the sixteenth century.

Sir HUMPHRY ROLLESTON, in his reply to the discussion, mentioned accounts of appendicitis in the early years of the eighteenth century. Parkinson, who practised in Hoxton, had described cases, as also had Hodgkin, Addison, and Bright, among others. In explanation of the decline of chlorosis, alterations in dress and a more liberal diet in meat, made more easily available by transmission from America, had been put forward as contributing factors.

Prof. A. J. CLARK (Edinburgh) read a paper on

The Historical Aspect of Quackery.

He defined the quack as one pretending knowledge or skill which he did not possess, who preyed upon the unlimited gullibility of the general public, and was actuated by purely selfish motives of personal gain through the exploitation of human suffering. In Prussia, quacks were required by law to register, but in this country there was no such check on their activities, which had been in no way diminished by the spread of education and medical discoveries of the present day. It was remarkable that the greater the advances made by the medical profession, the more unpopular they became with the masses. The last century had seen much agitation against the successes of medical science—notably antivaccination and antivivisection—movements in which there was evidence of strong feeling of distrust of the profession and a readiness to turn to the charlatan who claimed to possess supernatural powers of healing. The common type of quack was a man of forceful personality who exhibited a profound belief in his semi-miraculous powers of healing, regarded himself as inspired and so independent of the too slow advance of science. Among the many quacks there had been in the past and at the present day he mentioned Perkins, who 100 years ago attracted an immense number of followers to believe in his power to cure all disease by stroking the body with two metal rods or tractors. The most recent quack appliances were forms of simple electrical apparatus, for which great claims as panaceas were made, and certain of them had succeeded in achieving remarkable notoriety, mainly in America—e.g., in the case of "Dr." Rogers for whose radio swindle the sum of 500 dollars was charged; also Gaylord Wiltshire, who about a year ago in California traded on his extraordinary facial resemblance to Bernard Shaw. He supplied an apparatus consisting of a coil of insulated wire, with plug and socket in the form of a horse collar which was claimed to magnetise the iron in the hæmoglobin of the patient's circulating blood and so to effect cure. Dr. Abram's box or reflexophone, for which preposterous powers of diagnosis and cure had been claimed, was an apparatus of quite simple electrical device; it had attracted, until his death, a remarkable following in America, and had met with considerable attention in this country, where professional inquiry had failed to justify the extravagant claims made for it.

Prof. Clark concluded by stating that the basis of the success of the quack was the innate belief of mankind in the supernatural, much the same now even, as among primitive races convinced of the reality of magic and largely under the influence of mass suggestion. Religion, in the form of Christian science, appealed to a large number of the more intelligent people at the present day, as a means of finding cure from a great variety of conditions of disease and akin to it was the faith in the virtue of a charm or incantation of which there were many familiar instances in common practice, all of which were evidence of the underlying belief in the power of magic and survivals of the large part played by the supernatural in the life of primitive man, and seen to-day so forcibly in the fetish worship of native races.

Reports and Analytical Records.

MONARCHISTA OLD PORT.

(J. G. THOMSON AND CO., LTD., THE VAULTS, 87, GILES-STREET, LEITH.)

THIS wine, which was matured in wood, when analysed was found to have the composition:—

Alcohol by volume	19·4 per cent.
Alcohol by weight (grammes per 100 c.cm.)	15·3 ,, ,,
Total sugar	11·32 ,, ,,
Sugar-free extractives—	
Fixed acid as tartaric	0·33 ,, ,,
Volatile acid as acetic	0·02 ,, ,,
Mineral matter	0·22 ,, ,,
Water	72·81 ,, ,,

Preservatives were tested for with negative results. The wine is light in colour with a good aroma and palate. It may be regarded as a well-matured sound port.

BALKAN SOBRANIE CIGARETTES (LARGE SIZE).

(ALBERT WEINBERG, 3, CARLISLE-STREET, SOHO-SQUARE, LONDON, W.)

The tin contained 25 cigarettes, each weighing 1·57 grm. (24¼ gr.); approximately 18 cigarettes weigh 1 oz. The paper of each cigarette weighed 0·0503 grm. (0·77 gr.).

On analysis the following results were obtained:—

Moisture	12·56 per cent.
Ash	16·26 ,,
Sand	0·70 ,,
Nicotine	1·10 ,,

The cigarettes are stated to be made of finest Yenidje tobacco, and the analytical figures support this statement. The tobacco is of a good quality, quite free from stalk and midrib, contains very little sand, and possesses an agreeable odour. The cigarettes burn slowly and evenly, and are cool to the palate and throat.

Reviews and Notices of Books.

TEXT-BOOK OF PSYCHIATRY.

By D. K. HENDERSON, M.D. Edin., F.R.F.P.S. Glasg., Physician-Superintendent, Glasgow Royal Mental Hospital; Lecturer in Psychological Medicine, University of Glasgow; and R. D. GILLESPIE, M.D. Glasg., D.P.M. Lond., Physician for Psychological Medicine, Guy's Hospital, London. London: Humphrey Milford, Oxford University Press. 1927. Pp. 520. 18s.

Dr. Henderson and Dr. Gillespie have produced a text-book of psychiatry well in accordance with the modern developments of psychological medicine. Their outlook throughout has been definite and consistent, being founded chiefly upon the teachings of Eugen Bleuler and Adolf Meyer. Again and again emphasis is laid on the important fact that the psychotic picture is largely determined by the character traits present in the individual in his normal healthy state, and that the mental picture may vary just as one individual does from another. Like Clouston they consider it "unphilosophic to say that mind cannot rank as a causative factor, it seems contrary to plain clinical fact . . . to set aside the mental treatment of insanity would be to deprive ourselves of our chief therapeutic resource in many cases."

Starting from these premises, the authors have written a useful book, and have shown a comprehensive grasp of modern methods of care and treatment. Although emphasis is primarily laid upon the psychic side of the problem, physical methods are given their place in the scheme of treatment; appropriate drugs, hydrotherapy, rest, open air, occupational therapy are all included. These are not extensively detailed; for instance, malarial treatment for general paralysis is dismissed with a brief survey, and the differentiation of appropriate cases is not even attempted. The Glasgow Royal Mental Hospital has considerably developed occupational therapy, and good results are claimed from it in a number of cases, a sine quâ non being intelligent coöperation between the instructors and the nursing staff. The authors believe auto-intoxication to be overrated as a causal factor in mental disease, and draw attention to the work of N. Kopeloff and George Kirby in this connexion. They suggest a classification of mental states which is in accordance with Bleuler's views of the various "types of reaction." The chapters on the psychoses are very clear; the authors prefer to speak of schizophrenia rather than of dementia præcox as a separate entity. Involutional melancholia is excellently dealt with and carefully differentiated from the depressive phase of manic-depressive insanity. The high standard of the sections on the psychoses is hardly maintained in the chapters devoted to the psychoneuroses. These seem to have been modelled largely on the work of J. Dejerine, and an attempt has been made to fill gaps by a reference to the conditioned reflex, which is in no way explained or elaborated. Psycho-analytic methods are given a place. The writers seem to base their comments mainly on the earlier works of Freud, for their description of the technique is scanty, and no reference at all is made to the mechanism of cure. They deny the necessity of a sexual trauma in the generation of a psychoneurosis; yet in many of the cases quoted in support of this contention there are obvious irregularities in the patients' sexual lives. The book closes with the usual chapter on the medico-legal aspects of insanity. The fact that carefully selected case-histories are frequently used to illustrate the various mental conditions, in conjunction with the clear and concise style, makes the book easy to read in spite of the excessive use of brackets.

Students and practitioners who desire a good insight into the theory and practice of modern psychiatry will be well advised to study this work.

THE PSYCHOLOGY OF CHILDHOOD.

By MARY SCHARLIEB, D.B.E., M.D., M.S. Lond., J.P. London: Constable and Co., Ltd. 1927. Pp. 194. 6s.

BOOKS on child psychology are extremely plentiful to-day, and are superficially much alike, but of very varying merit. Possibly none of them do much harm, as a mediocre writer will generally rely on the unexceptionable statements of a standard text-book, but no parent wants to waste time reading second-hand advice. The distinguishing feature of a book of this sort is the atmosphere which the writer manages to create in it, and which will incline the reader towards an attitude of mind more than instruct him or her in certain facts. Dame Mary Scharlieb has the highest qualifications of knowledge for this task, as she has brought up a family of her own, has carried on child practice for the large part of her life, and is a magistrate in a London juvenile court. The advice she gives is absolutely sound, and permeated with a refreshing comprehension of what is best in the modern schools of psychological thought. What perhaps, however, will capture a parent's confidence more than this is the atmosphere the book carries of ripe conservatism. There is no raw controversy nor tacit scorning of old beliefs. Dame Mary Scharlieb reminds parents throughout that the whole success of their venture depends upon their whole-hearted practice of the ancient virtues of mutual devotion and responsibility, and frankly advocates the practice by them of the traditional religion of the Church, and that they should instruct their children in it. Whatever a reader's individual views, he will not fail to profit by the ideal (that the writer holds up) of whole-hearted self-application to the most difficult task of all.

A DOCTOR'S VIEW OF LIFE.

By WILLIAM J. ROBINSON, M.D. Edited, with a biographical introduction, by EDEN and CEDAR PAUL. London: George Allen and Unwin, Ltd. 1927. Pp. 526.

THIS book consists of a miscellaneous collection of short articles, aphorisms, and jottings from the pen of an American medical man of wide literary and humanitarian interests. For nearly 25 years Dr. Robinson has been the editor of a paper, *The Critic and Guide*, from which the contents of this book are, for the most part, reproduced. They range over a wide variety of subjects—the Great War, travel, literature, character types, athleticism in America, and numerous contemporary medico-social questions such as birth control (of which the author has always been an insistent though temperate advocate), vivisection, dietetics, sexology, psycho-analysis, and others. These subjects are treated with a vigour, a candour, and a consistency of outlook which springs from a clearly formulated philosophy. It is the outlook of an advanced liberal, a pacifist, an advocate of freedom of speech and thought, an agnostic. Yet Dr. Robinson is no extremist. Though an agnostic he is tolerant, appreciative even, of the religious attitude; though a pacifist he is not an unresister; though desiring greater freedom of discussion and action in sexual matters, he is neither an advocate of unrestraint nor a believer in the pan-sexualism which now dominates psycho-analytic theory; though a birth-controller, he holds that births must be intelligently regulated in the light of racial and international as well as of personal issues. The position which he assumes is, therefore, one which exposes him to attack on both flanks—from opponents of his mode of thought and from extremists in the causes which he has espoused.

Dr. Robinson's fearlessness and candour—both of which, the reader feels, are rendered the more effective by his essential disinterestedness—have made him many enemies, especially during the war. But they have also made for him may sincere admirers and supporters.

THE LANCET.

LONDON: SATURDAY, OCTOBER 1, 1927.

THE NEW MEDICAL SESSION.

ON the first of October words of welcome may well be addressed to the students who to-day are beginning their studies in the various medical schools. The official introductory lecture is not now, as it was by former generations, considered to be an essential feature of the opening of the winter session; but in a few schools the old custom is maintained, while the speakers at various inaugural dinners, though addressing gatherings comprised mostly of qualified men, will be sure to reflect upon the course which medical training now takes, and to consider the professional outlook in its general and special developments. We believe that they will be able to congratulate with real sincerity those who have decided to enter upon the career of medicine, and also that those to whom the management of our professional education is entrusted to-day are aware of the great difficulties which attend the medical career, and are prepared to smoothe them for their juniors. No time will be wasted which is spent, as opportunity offers, in assisting the recent recruits to grasp the principles on which medical practice will have to be conducted, in whatever of the varying careers they may decide to adopt. Life in a medical school is well calculated to produce sympathetic recipients of such advice, for as a means for the development of character it is doubtful if any better training could be devised than the routine of the medical student both in the intensive nature of the studies and in the breadth of their purpose.

But the probationary training must often be truly bewildering to a recruit. The curriculum grows yearly more elaborate, and its rigidity is imposed upon it by an examination system for which nothing else can be substituted. So that the teacher and the taught are alike engaged in a fight against time. Yet it is essential that the medical student should have placed before him the fact that the object of his long years of study is not to pass examinations, but to fit himself to carry on a great corporate work for the benefit of mankind. It has long been advocated in these columns that opportunities should be made at medical schools for the giving of advice to those about to be qualified upon the conduct of medical practice. This implies no regret at the dispensing with the old apprenticeship system, for even when it flourished only a small proportion of the medical students had a sound conception of what may be called professional ideals, and there is no reason to suppose that the proper spirit cannot be thoroughly well inculcated in the medical schools of to-day. It is generally recognised that the ethical conduct of a doctor is dictated by the same rules and observances of neighbourly duty as the conduct of those who follow any other profession, and elaborate codes would not help the good doctor who is a good citizen, and might even defeat their object. No profession can be inspired with lofty endeavour by by-laws. Ethical rules to have value will be those which teach the student while he is still at the hospital, as the practitioner when faced with facts, that medical practice must be conducted in accordance with the spirit that makes all members of the profession ready to participate in the strengthening of authority for the prevention of backsliding, and equally ready where necessary to represent to authority that the guidance may itself need guiding.

The number of medical students registered during the year in each of the three divisions of the United Kingdom for the past 20 years appears now to stand in normal relation to the population, and the figures relating to qualification during those years have the same message. An increase of students from 1915 to 1920 arose distinctly out of the immediate needs of the war, and was reflected five or six years later in the larger number of those acquiring medical degrees or diplomas. Five years ago Sir DONALD MACALISTER, in giving to the General Medical Council the figures relating to medical students for recent years, pointed out that the number registered in 1920 was higher than any that had occurred previously save in 1919, the tendency having been steadily upwards since 1913. The figures to which he referred ranged from 1480 students in 1913 to 3420 students in 1919, and those who could read meaning into the figures felt safe in prophesying that a movement downwards in the entry to the profession would take place. This duly occurred, and the number of medical students in 1926 was actually a little below the figure of 20 years previously, and a little more than a third of the number in 1919. But the figure for 1926 is more than double the figure reached in 1923, when for no very obvious cause the alterations in the curriculum of study led to the registration of only 545 new entrants. The figures certainly suggest stabilisation, and do not support in any way the oft-repeated statement that the profession is or is likely to be overcrowded. It will be safe for those in charge of our new adherents to tell them that there is no risk of unemployment.

NEW LIGHT ON PERNICIOUS ANÆMIA.

EVERY contribution to our knowledge of pernicious anæmia deserves close attention, because it is a malady with a necessarily fatal upshot, and one which, according to a wide body of medical opinion, is becoming commoner every year. Interest centres at the moment around the claims of American workers to have obtained striking results from dietetic measures, and especially from the administration of diets containing large quantities of liver. Dr. G. R. MINOT and Dr. W. P. MURPHY, of Boston, have now published [1] a study of 105 cases of pernicious anæmia treated by this method during the last few years. In their previous communication, 18 months ago, they referred to 45 cases only, but many others have since come under their notice with results not appreciably different from those observed in the smaller series. Their successes have been confirmed by other American physicians, and unpublished reports from observers in this country have been of a like enthusiastic nature. In general the observed effect has been to restore the red corpuscle count from the low figure seen during the acute attack to something over 4½ million per cubic millimetre. Relapses have been singularly few, and cases which have done less well have almost uniformly been those in which insufficient amounts of liver were being taken. The diet prescribed by MINOT and MURPHY consists of about 200 g. of cooked liver per diem, with generous amounts of fruits and vegetables containing 5 to 10 per cent. of carbohydrate, together with red muscle meat. The total

[1] Jour. Amer. Med. Assoc., 1927, lxxxix., 759.

fat in the diet is low, not exceeding 70 g. a day. Sugar is diminished and concentrated carbohydrate and milk are not included to the exclusion of other foods. The cooked liver may be served in any way that pleases the patient, provided that excessive boiling is avoided. It is suggested that mammalian liver is preferable to that of birds, whilst kidney can occasionally be given as a substitute. A good many patients have preferred to take the liver in the form of raw pulp, and it is suggested that it has its maximum value in this form. 180 g. of such pulp divided into two portions and taken mixed with orange-juice has been found a useful prescription in some cases, whilst in others—especially those in which the patients were very ill and subject to nausea—it was found desirable to administer it through a stomach-tube. It is considered advisable to continue this treatment long after the blood-count has become normal, although a good many cases have remained well in spite of reducing the dose to 150 g. three times weekly.

The assessment of therapeutic benefit in pernicious anæmia must be regarded as exceedingly difficult because, whether treated or left alone, the patients have a tendency to improve markedly from their worst period, although they almost invariably suffer successive relapses, which finally lead to a fatal termination. Caution is therefore necessary in ascribing improvement to any remedy which has been administered. Published and unpublished accounts of the MINOT-MURPHY treatment suggest that with it improvement is more rapid and relapse postponed longer than with any other form of treatment observed during recent years. It is clearly impossible, as its authors themselves emphasise, to say whether this treatment is of permanent value until five or more years have passed; there can, however, be little doubt that the method is one worthy of widespread adoption in order that a valid conclusion may be drawn without unnecessary delay. So much for the observations themselves. The reasons put forward by Dr. MINOT and Dr. MURPHY for the success of their treatment are:—

1. The recognition of the similarity of many symptoms and signs of pernicious anæmia to those of pellagra, sprue, and beri-beri.

2. The observation "that patients with pernicious anæmia have often taken an abnormal diet for many years, noticeably one with a deficiency of red meats and an excess of fats particularly derived from dairy products and pork."

3. The geographical distribution of the disease.

4. The knowledge that secondary anæmia is frequently associated with a faulty diet.

5. The fact that patients with pernicious anæmia often had better health "when placed on a well-balanced and high caloric diet containing excess of nitrogen."

We doubt whether these reasons will make any great appeal to those with wide experience of the disease. In the same journal will be found an account [2] by Dr. K. K. KOESSLER and Dr. S. MAURER, of the University of Chicago, of the results of treating pernicious anæmia with a diet of high caloric value and rich in vitamins. Their report covers 40 patients who have been treated during periods ranging from six months to two years. No definite statistics are given concerning the total results save that all the patients, with one exception, are alive and in good health with a normal blood picture. Liver in liquid extract form is part of the diet in many cases, and these authors also lay stress on the faulty diet which is presumed to have preceded the onset of the disease. In contrast to the Boston school, the Chicago observers state that a low fat-content is not justified and large amounts of cream, butter, milk, and cod-liver oil are advised. The efficacy of liver and kidney is considered due to the high content of vitamins A and B in these organs. It is clear that we are here faced with a dietetic régime largely empirical, in which the presence of a considerable quantity of liver is the one outstanding feature.

A further difficulty in assessing the effect of treatment in these cases is the fundamental difficulty of diagnosis. It is true that in this country pernicious anæmia stands almost alone as the cause of really severe anæmia with disproportionate fall in the total number of red corpuscles. But—with the possible exception of the Price-Jones curve—we have no infallible test enabling us to say without doubt that this or that case is one of pernicious anæmia. As soon as successful treatment prevents relapse and autopsies become the exception, it is going to become almost impossible to decide whether the cases dealt with have really been examples of the malady described by ADDISON. A paper [3] by Dr. D. I. MACHT, of the Johns Hopkins School of Medicine, Baltimore, which also appears in the same journal, promises to be of value in this respect. He has tested the blood serum in many cases of this and other blood diseases, and believes that in pernicious anæmia the serum shows a toxic effect upon plant protoplasm quite different from that observed in the control cases. Briefly the method consists in placing seeds of *Lupinus albus* in blood serum, and measuring the inhibitory effect on growth exercised by the blood serum from pernicious anæmia cases. It is believed that the somewhat complicated procedure affords a genuine diagnostic test. Exposure of the serum to irradiation with ultra-violet rays is claimed to have the effect of making it less toxic, and the intravenous injection of substances such as eosin with subsequent ultra-violet irradiation is claimed to have given promising therapeutic results. The complexity of this latest inquiry is such as to invite a special caution, but in so far as it affords a possible new channel for diagnostic exactitude it will command attention.

[2] Jour. Amer. Med. Assoc., 1927, lxxxix., 768.

[3] Ibid., p. 753

SIR ARTHUR SHIPLEY.

THE late Master of Christ's College, Cambridge, was a well-known figure in College and University circles, and this he deserved in respect of his qualities as a just administrator and able organiser. He was known throughout the scientific world as a zoologist, and this in response to a mass of work partly of research and partly of literary character and all bearing the impress of unflagging industry. But beyond this SHIPLEY had impressed the world at large by the breadth of his sympathies, the keenness displayed in the wide range of his interests, and his gift for recording his impressions in a clear and attractive style. He began his career with the intention of becoming a doctor, but the Cambridge school of zoology, with MICHAEL FOSTER and his great pupil, FRANCIS BALFOUR as teachers, attracted him, and he never pursued the whole medical course, turning aside to the fascinating study of zoology. But for many years at Cambridge after his own promising undergraduate period was over, his zoological work brought him into contact with the medical school, so that many practitioners will remember SHIPLEY as an enlightening lecturer and a suggestive

writer and many more as indirectly an examiner. For SHIPLEY examined for the Natural Science Tripos for many years, during which it was usual for the medical candidate to take as his subjects those which he would require later for professional tests, while his text-book on the Zoology of the Invertebrata was in use for an extended period among undergraduates, during which time he was demonstrator of comparative anatomy in the University and lecturer on advanced morphology. SHIPLEY'S later work, neither the original researches which brought him the F.R.S. nor the joint editorship of the Cambridge Natural History, had any close relation to medicine, but such connexion as there was he availed himself of by contributions to Allbutt and Rolleston's "System," and by two useful and amusing books of parasitology entitled "Minor Horrors of the War." Probably few men of SHIPLEY'S age, not actually professional soldiers, appreciated better than he did the life of the man in the trenches, for he placed Christ's Lodge at the disposal of the medical authorities in 1915, and his study, in which he still contrived to work, became the sitting-room of a convalescent home always crowded with injured men. SHIPLEY'S pictures of the parasitology of the war were drawn from the life, and contained many medical lessons. In short, though not a doctor, he was one to whom our profession owed a real debt.

Annotations.

"Ne quid nimis."

THE PROLONGATION OF HUMAN LIFE.

TEN years ago a new precedent was created in the publication of the Registrar-General's decennial supplement, the preparation of its life-table portion being entrusted to Mr. George King, F.I.A., instead of being done by the staff of the General Register Office. That report was invaluable not only for the multiplicity of the local and national life-tables given in it, but also because it made it possible to compare life-table data for the periods 1901–10 and 1910–12 by means of exactly comparable data (because calculated on a uniform basis) for earlier periods in our national registration history. The present life-table report [1] has been prepared by Sir Alfred Watson, the Government actuary, who happily has adopted in the main Mr. King's technical methods, thus preserving that accurate comparability with earlier periods which it is extremely important to maintain. The present differs from previous life-table supplements in containing no life-tables giving the average experience of 1911–20. The reason for this at once appears. The Great War disturbed the natural course of life, and the events of the decennium as a whole would have little value as a measure of national vitality. Apart from this, the plan of taking the vital statistics of the three years, 1920–22, which centre around the census year, offers great practical facilities and gives us a measure of national vitality of greater current interest than one dealing with an already obsolescent experience.

Sir Alfred Watson has given himself a more limited scope than his predecessors as regards variety and number of life-tables; and we should also have welcomed a fuller commentary on the tables given from his competent pen. Subject to these slight regrets, the report is one which should be studied by all interested in the national health. In a subsequent special article we shall attempt to give some of the most important results of his work. As Sir Alfred Watson points out, the most useful tests of vitality are (*a*) the rate of mortality of different ages; (*b*) the number of survivors, at different ages, of a given number born; (*c*) the expectation of life at different ages; to which may be added (*d*) the probability of surviving, say, ten years at any given age. The death-rate in age-periods can be given without constructing a life-table, and nothing detracts from its supreme importance. The number of survivors beyond a given age out of a given number born, like the expectation of life at any given age, represents in a life-table the summarised experience of many ages; while the number of survivors at the end of any ten years of life out of a given number beginning those ten years, like the corresponding death-rate represents the vitality in that particular period.

The expectation of life, although in some respects not so useful a measure as the others named above, has been so long used, that it may be well to give in this article a few figures under this heading, leaving for later consideration the remainder of the report. If the English Life-Table No. 7 (experience of 1901–10) be compared with the English Life-Table No. 8 (1910–12) and with the English Life-Table No. 9 (1920–22) at four ages of life, the following result is seen:—

Expectation of Life.

Year.	Males. Age.				Females. Age.			
	0	20	40	60	0	20	40	60
1901–10 ..	48·5	43·0	27·0	13·5	52·4	45·8	29·4	15·0
1910–12 ..	51·5	44·2	27·7	13·8	55·4	47·1	30·3	15·5
1920–22 ..	55·6	45·8	29·2	14·4	59·6	48·7	31·9	16·2

On an average a male child born during 1920–22, on the basis of the experience of mortality in those years, may expect to live 7·1 years longer than a male child born in 1901–10, the difference for a female child being 7·2 years. Similarly, a young man, aged 20, in the more recent period can expect to live 2·8 years longer and a young woman 2·9 years longer than in the earlier period; and even when the age of 60 is reached a male born in the later period can expect on the basis of the experience of 1920–22 to live 0·9 year longer, and a woman born in the same period can expect to live 1·2 years longer than one born in 1910–20. The preceding statement illustrates the value of this function, the expectation of life, in summarising in one figure the entire experience of life subsequent to a given age, and for this reason its use will doubtless be continued. But it does not show clearly at which part of life the gain has been secured; and for this purpose either death-rates for age-periods or the probability of living, say, ten years, are required. To the use of these tests we propose to return.

THE CLEAN MILK PROBLEM.

MILK and green vegetables, says Sir George Newman,[1] are of the greatest importance in any practical attempts to arrive at a satisfactory diet; they are protective foods and make up for the deficiencies of articles such as bread, sugar, fat, pulses, and potatoes, which are relatively cheap and therefore form the staple nourishment of our population. Unfortunately, milk and green vegetables are not consumed as largely or as widely as they should be. Vegetables are dear—although they could be cultivated in abundance—because the means of distribution to our cities are so faulty. Milk also is expensive, and for this and other reasons its consumption is astonishingly small. The amount taken daily in England and Wales is estimated at about one-quarter of a pint per head of population, and it is obvious, in the light of recent experiments on growth and nutrition, that the national physique

[1] The Registrar-General's Decennial Supplement, Part I. Life-Tables. 2*s*.

[1] Annual Report of the Chief Medical Officer of the Ministry of Health for 1926, p. 185.

would benefit if it were considerably increased. One of the factors that would promote such an increase is confidence in the purity of milk and in its keeping qualities; in other words, a cleaner supply would bring about a greater demand. And although the medical profession could and should do much to popularise milk as a food, it has also a duty, as Prof. F. T. G. Hobday shows in an article on page 738, to encourage all attempts being made to ensure its purity. Milk ought to be clean, and would soon become so if the profession were to use its influence in this direction.

The greatest difficulty is to free the milk-supply from tubercle bacilli. Sir John McFadyean, speaking at Torquay the other day, said that there is hardly one of the 230,000 herds in the country which does not contain an infected animal, whilst Prof. Hobday quotes an estima'e that the number of tuberculous cattle is nearly a million. From this it is obvious that the immediate remedy cannot be wholesale slaughter, but the magnitude of the problem need not provoke despair. By regular inspection of herds it is possible to detect nearly all the animals which are infective. Under the Milk and Dairies Order and the Tuberculosis Order county councils are expected to control the diseases of dairy cattle in their areas, and a certain number have started routine periodical inspection of these animals by veterinary surgeons. This is likely to have far better results than any half-measures, and an active policy is essential. The Tuberculosis Order certainly cannot be trusted to put things right by itself, for the effect of merely offering compensation to those who own infected cows is to allow ignorant or unscrupulous farmers to delay notification until their animals have reached the terminal stages of the disease. As Dr. William Savage has forcibly argued in our columns,[2] the Order permits them to claim compensation after allowing their cows to disseminate disease, both to human beings and bovine contacts, over a long period, whereas it ought rather to inflict a penalty for failure to notify disease as soon as it is suspected. The early symptoms and signs are admittedly equivocal and diagnosis at this stage is a matter for veterinary surgeons. The services of these experts, therefore, should be freely at the farmer's disposal, so that he has no reason or excuse for inaction. At present, even when a case of open infection has been found, there is little or no inducement to the owner to have the rest of his herd examined.

The removal of animals with obvious tuberculosis is both valuable and necessary, but it is even better to get milk from herds which have no infection at all. Steady progress is being made in the production of tubercle-free milk, and in 1926 there were 252 herds, comprising 9100 dairy cows, supplying pure milk of this kind, which is labelled either Certified or Grade A (tuberculin tested). We have previously discussed[3] the advantages and disadvantages to the farmer of keeping cattle which do not react to the tuberculin test, and now need only repeat the statement that the greatest disadvantage is the absence of a market for the milk which they produce. Prof. Hobday shows that at Reading, thanks to the admirable work of the National Institute for Research in Dairying, an adequate supply of milk from tuberculin-tested cows is retailed at prices only a little higher than the ordinary, and it is certain that a public demand, stimulated by the medical profession, would lower these prices still further. People who can afford pure milk ought to buy it. The attempt to secure real cleanliness, although made by comparatively few milk-producers, has already done much to raise the standard of production in dairies which have not themselves begun to supply graded milks. As "Dairy Farmer" says in his letter on page 740, the farmer is finding more and more that scientific methods are not only patriotic but profitable.

[2] THE LANCET, 1927, i., 722.
[3] THE LANCET, 1926, ii., 398.

THE JEWISH HEALTH ORGANISATION OF GREAT BRITAIN.

A WORLD Union for Preserving the Health of the Jews, which bears the abbreviated title of "OZE," was founded in 1912 by a group of Jewish physicians in St. Petersburg and was reorganised ten years later in Berlin when branches were established throughout Europe. In Eastern Europe, where a succession of disasters has shattered the health of the Jewish community, the work of the Union has largely been in the nature of relief of distress and the treatment of epidemic disease, but in Great Britain, where conditions have been happier, the programme of the Organisation has taken on more of a preventive character. The aims and methods of the Organisation in this country may be briefly stated as (1) to raise the standard of the physical health of Jews in Great Britain; (2) to supervise the sanitary conditions of Jewish homes, schools, and workshops, by way of supplementing the work of local authorities; (3) to collect statistics concerning the expectation of life, anthropometry, and pathology of the Jewish community; (4) to publish and distribute literature on health topics; (5) to organise lectures on health and to arrange for a museum of hygiene. All these objects have already been to some extent achieved: the Saturday evening lectures held for four winters at the Whitechapel Art Gallery have been widely attended; the various Jewish burial societies have agreed to supply monthly returns of deaths, and over 50,000 death-records have already been collected and collated with a view to determining the prevalence of cancer; 2000 children attending Jewish evening schools have been examined for their type of visual defect; and a report is now ready and will be published shortly on the comparative intelligence of Jewish and non-Jewish school-children, 2000 of whom between the ages of 8 and 14 have been tested. The Council of the Organisation has also been investigating the curious prevalence of left-handedness among Jewish children as compared with non-Jewish. The latest effort of the Organisation is to open a clinic for nervous and defective children on a small experimental scale at the Jews' Free School where the milder disorders of personality and behaviour are to be investigated with a view to their constructive treatment. The heavy financial responsibilities so incurred are met entirely by voluntary contributions, and an appeal for support has been issued signed by prominent members of the Jewish community. The hon. treasurers of this appeal are Lord Rothschild and Sir Samuel Instone, to whom donations may be addressed at 4, Upper Gloucester-place, London, N.W. 1.

MEGALOCOLON IN INFANCY.

DILATATION of the colon in infancy may be due to definite narrowing of the intestine or anal canal or may occur without any sign of stricture. The latter condition, known as Hirschsprung's disease, has been attributed to spasm and muscular incoördination, but these terms are not very exact and the underlying mechanism is not fully understood. Dr. Joseph Brenneman has recently described[1] six cases of megalocolon in early infancy which he has observed during the last 16 years. The patients were first seen at ages between 2 weeks and 3 months; most of them vomited and all of them had obstinate constipation and distended abdomens. In five of them it was found that there was a firm constricting ring with a sharp edge 2–3 cm. from the sphincter ani. (In the sixth case the distance was not measured.) The obstruction offered definite resistance to the finger but yielded gradually to digital dilatation, and although at first it was often difficult to insert even the little finger the resistance was overcome by considerable slow pressure and in time the index-finger could be used. Treatment by this method for several

[1] Jour. of Amer. Med. Assoc., August 27th p. 662.

weeks led to recovery in four of the cases; the distension disappeared, the bowels became regular, and three months later they were apparently cured. In one case the stricture was relieved, but the late result is not reported, whilst in one the baby died. The latter case is particularly interesting, because at autopsy there was no sign of stricture although a tight ring with a sharp edge had been felt during life. Dr. Brenneman considers that these six cases are an example of a congenital anomaly identical with more severe malformations in this region but very restricted in extent. As a result of failure of the descending mesenteron to fuse with the ascending proctodæum a membrane may be formed resembling a hymen and having a central aperture. The consistence of the obstructing membrane depends on the number of layers which form it. He comments on the fact that most of the recorded cases of stricture have been treated surgically, the patients often being people of considerable age, and whilst agreeing that for anal obstruction surgery is often the only hope, he suggests that many constrictions can safely be treated and cured by dilatation.

MENTAL DISORDER IN SCOTLAND.

COMPETITION is as valuable a spur to progress in medicine as in commerce, and it is of interest to compare the annual report of the General Board of Control for Scotland with that of the English Board, reviewed in our columns last week (THE LANCET, Sept. 24th, p. 677). The Scottish Commissioners do not enter into that full discussion of the situation which makes such interesting reading in the English report, and the volume is largely taken up with statistics and tables. Although the preamble deals mainly with the problem of the mentally defective, Scotland does not appear to be so much concerned with the difficulties of ascertainment and accommodation. The chief anxiety seems to be the state of public opinion, as stress is laid on the desirability of institutional training and the fact that certified defectives are periodically reconsidered with a view to release. The total number of defectives on the register is 2764. The English Board regards 1 per 1000 as a very conservative estimate of the defectives in our population, and as there are nearly 5 million people in Scotland, it is evident that either the proportion of defectives is very much lower than in England or else many have not yet been "ascertained." A large number are still unsuitably detained in institutions for the insane and the colony system is in its infancy. There is a colony at Waverley Park for 110 girls and excellent progress is reported in developing the patients' capacities. The colony is the result of voluntary effort, and to the splendid work of the Scottish Association of Women Citizens is due the purchase of 750 acres by the Royal Scottish Institution at Larbert for another industrial and farm colony for adolescents. There are 11 other certified institutions and 1000 patients are in private dwellings. The increase in defectives registered during 1926 was only 140. The Board is carefully watching the fate of sufferers from encephalitis lethargica, for whom there are ideal observation wards at the Stobhill General Hospital. The label, "post-encephalitic mental defect," is deprecated, on the ground that such patients may still have a chance of complete recovery if properly and actively treated.

At the beginning of the year there were 18,580 insane persons under official cognisance, including 68 criminal lunatics at Perth, and 45 imbeciles, not certified under the Mental Deficiency Act, in training schools. The ratio to the population corresponds with that of England. In poor-houses there were 1090 and in private dwellings 1718. The English Commissioners constantly plead for more extended use of those sections of their Act which permit the transference of harmless incurable patients from institutions which are or should strive to be mental hospitals, to private guardianship and Poor-law wards. In this respect Scotland, with nearly one-sixth of its insane population outside the asylums, is nearer the ideal than England. The report regrets the decrease that has occurred since the war in the number of boarded-out lunatics. This decrease is partly due to economic factors; higher agricultural wages made it more difficult to find guardians in the country and the increased cost of living made city Poor-law authorities unwilling to take patients at the low board-rate. With the return to normal conditions the Commissioners hope to get more patients boarded out; maintenance is cheaper outside than inside an asylum, and there can be no doubt that aged senile lunatics are far happier sharing a "home" atmosphere, however humble, than in the best of institutions. This provides no argument against certification, however, for the report notes that they are generally better cared for by strange guardians than by their relatives.

In sharp contrast to the year's increase of 2743 in England, Scotland actually showed a decrease of 90 in the number (2304) of persons certified for the first time during 1926. The number of voluntary patients admitted to mental hospitals during the year was 628, nearly double the average figure for the ten preceding years. The Crichton Royal Institution achieved, in the second six months, the distinction of admitting 17 more voluntary than certified patients. The death-rate for the year was 8·3, the recovery-rate 35·9. Both figures show improvement on those of 1925, and are comparable with the English figures. The Scottish death-rate remains a little high. The average standard of care and treatment in the mental hospitals is excellent, as we have noted in considering them individually under the heading of "Mental Hospital Reports." There are seven Royal asylums, 21 district, and two private asylums. One of the last is a new house for Roman Catholic ladies opened last year by the Order of Augustinian Sisters; it has at present five voluntary boarders. Fourteen poor-houses have lunatic wards. There were only four suicidal deaths during the year. In 1926, 98 patients were sent out on probation; of the 48 whose period expired during the year, 17 were finally discharged as recovered. Less use seems to be made of this important trial trip system than in England. Despite the gratifying advances in treatment year by year, the dominant note of the English report is one of anxiety and urgent need for further efforts. From this distress the Scottish report is free.

LEGAL AID FOR PRACTITIONERS.

THE annual general meeting of the Medical Defence Union was held on Saturday of last week at the Royal Bath Hospital, Harrogate. It is well that the Union should meet from time to time outside the metropolis, for it is in the more rural areas that the practitioner is most in need of legal help and least likely to obtain it, except at the hands of a central organisation. No doubt north country practitioners are as able as any to conduct their own affairs without assistance, and may even cherish a not unreasonable belief in the combination of rugged integrity and judicious self-interest, but the solicitors to the Union point out that practitioners unaided are at the mercy of a section of the public who seem to think they are justified in raising any claim, however extravagant and unwarranted, to avoid payment of their just debts. By these persons members of the medical profession are regarded as fair game whenever some slight error of judgment, some momentary distraction of attention plays into their hands. The Union is precluded by its constitution from simply undertaking debt collection, but, so soon as a charge of negligence, threatened as a possible defence to a claim for fees, has been definitely recorded, the experience of the Union is at the practitioner's service. Every point in his favour is brought to the forefront, and every step taken to defeat the claim if unjustified, or, if justified, to ensure that the claim is equitably adjusted.

The policy of the Medical Defence Union is definitely against any settlement out of court, for, in settling a claim which has no merit, the practitioner is really giving way to blackmail and encouraging similar claims against his professional brethren. In five of the cases in which a claim for damages was brought or threatened during the past year, the only negligence alleged was the failure to direct the patient to have an X ray examination made of the injury for which he was under treatment. The Union therefore begs the practitioner, if only for his own protection, to advise his patient in any such case to undergo an X ray examination, and, if this is refused, to ensure that there is some evidence of the advice thus given, either in the form of a witness, a letter written at the time, or a note in the case-book. Even the practitioner with a case so clear and good that he readily obtains a verdict against his patient with costs is not thereby protected against financial loss. During the year the Union only recovered against the other side the sum of £30 9*s*. 6*d*. out of the many hundreds of pounds to which it was entitled as the successful litigant. Indeed, the Finance Committee of the Union lays stress in its report on the fact that heavy legal costs are often incurred in the most successful cases, because, when the people who bring the action are possessed of no means, a verdict with costs affords no financial relief to the costs of the defence. This Committee invites attention to the cost incurred in defending six cases in 1926, amounting in all to £1821, while the amount paid in yearly subscriptions by these six members was only £77. It is impossible for the Union to insure itself against exceptionally heavy expenses from the payment of damages in any particular year; hence the value of a large reserve fund, and incidentally, the convenience of prompt payment of subscriptions.

The report also calls attention to the less spectacular portion of the Union's work—namely, the many times in which the solicitors sat as legal assessors to the General Secretary in arbitrations between members of the medical profession. Since its foundation the Union has aimed at promoting unity within the profession and discouraging intra-professional disputes. It has never advocated complete indemnity or protection for medical men, but merely that those who are doing their duty honestly and rendering their services to the best of their ability should have a reasonable measure of protection. The Union gives its members the assurance that no action can be brought against them without reasonable cause.

NURSES AND THEIR WORK.

A FORTNIGHT ago Dr. T. F. G. Mayer called attention in our columns[1] to the ill-effects that result from constant standing and asked why nurses should be kept perpetually on their feet when so often they might do their work better sitting. The two correspondents who replied to his letter last week[2] took different points of view. One of them, the matron of a large provincial hospital, thought that nurses must be getting rather tired of people taking up the cudgels on their behalf, and said that they were encouraged to sit at their work whenever possible. The other, also an authority on nursing, said that the matter called for serious attention; many nurses feared to sit lest their patients should think they were relaxing unnecessarily, and it would be a great help if in giving directions the medical man would indicate that certain treatment would be better carried out while sitting, thus reassuring the patient and training the nurse to conserve her strength. This seems to us an excellent suggestion. It is quite true that in past years there was much stiffness and unnecessary discomfort to be borne by nurses and there are doubtless survivals still. A few of those who suffered greatly from discipline are apt to insist on such rigid behaviour from their subordinates. It would be wrong, however, to suppose that in the training hospitals of to-day nurses are kept on their feet unnecessarily. If there is something to be done at which a nurse can possibly sit she will probably remain glued to a chair as long as she can, and this with the complete approval, and probably at the request, of the reigning sister. On the other hand, aching feet are ever present, especially among the recruits, and this is, of course, because they hardly ever have time to sit down. Whilst the health of the nurses is carefully considered in most hospitals, it is none the less true that the departure of one of them from a large ward where the work is heavy throws a big extra load on those left behind; for there is seldom the chance of a "relief" coming to take her place. Thus it is unusual to report any but the most incapacitating indisposition, though this state of things is naturally contrary to the expressed wishes of the authorities. Holidays have to be deferred and a given date can seldom be depended on, because in most hospitals, however large, there is not an extra staff sufficiently large to fill all gaps, including the unforeseen. Nothing can prevent nursing from being a hard life; from its very nature there is always something to be done and something which will not wait. But the present situation could be improved if there were more nurses. "Matron" shows this when she says that a nurse is practically certain of being able to obtain another post. In big London hospitals the shortage is largely due to lack of accommodation, for there is little money available for building. Nevertheless, things have altered much more since the war than is generally supposed, and in the best hospitals nurses now have good food and rooms, a fair amount of recreation, and—generally speaking—excellent care when they report sick. The need is for a greater number of enthusiastic girls to take up this form of work, which during the years to come should offer more and more of the ingredients of happiness.

[1] THE LANCET, Sept. 17th, p. 636.
[2] Ibid., Sept. 24th, p. 687.

EXAMINATION OF TUMOURS OF THE BREAST.

Prof. John Fraser, of Edinburgh, delivered to the American College of Surgeons in 1926 an address, recently printed,[1] containing some observations on carcinoma of the breast based on the examination of sections made on the key-block system. The breast is divided into two portions through the area which is to be examined. From the surface of one portion a celloidin "whole" section is cut, and this will give the general topography of the gland. From the corresponding surface of the other portion a series of numbered blocks of smaller size are cut in paraffin; these will give the finer histological details of every portion of the "whole" section. The main points which emerge from the examination of 50 mammary glands are the following: (1) Any classification of malignant breast tumours is unsatisfactory because it is found that often one "whole" section exhibits in different parts several different types. The varieties known as "scirrhous" and "encephaloid" may be found side by side, and these terms thus become, more than ever, of academic significance only. (2) Prof. Fraser has been greatly struck by the fact that the epithelium in the ducts and acini for some distance around the malignant growth shows a change in the direction of proliferation, apparently as the result of exposure to a fluid-borne or secretion stimulus. This may be derived from the malignant focus or may be responsible for both malignant and non-malignant changes, and the realisation of this affects for Prof. Fraser his whole conception of the pathology of malignant disease. This observation is, however, not quite new. Attention was drawn to it by Mr. Geoffrey Keynes in a Hunterian lecture delivered in 1923.[2] This observer approached the problem from another angle, studying first the changes seen in "chronic mastitis" and suggesting that a secretion stimulus was probably responsible

[1] Surgery, Gynecology and Obstetrics, 1927, xlv., 266.
[2] British Journal of Surgery, 1923, xi., 89.

for these. The distant epithelial changes surrounding a carcinoma seemed, then, to afford some confirmation of the first idea. It seems possible that much may yet be learned of this aspect of the pathology of malignant disease from the study of the effect of various chemical agents on the cells of living tissue cultures.

SOCIAL HYGIENE AND THE EMPIRE.

THE British Social Hygiene Council, which was formerly known as the National Council for Combating Venereal Diseases, has organised another imperial conference to be held at the Caxton Hall, Westminster, from Oct. 3rd to 7th. The proceedings will open on Monday morning with a welcome to delegates and addresses by High Commissioners for the Dominions and representatives of Government departments. The principal subjects to be considered are Social Hygiene in India and the Crown Colonies, Protectorates, and Mandated Territories, Seamen's Welfare in Ports, and Social Hygiene in its Medical, Educational, and Administrative Aspects. As is natural, a large number of medical men will take part in the discussions. Surgeon-Captain T. B. Shaw will give an account of the Incidence and Prevention of Venereal Disease in the Navy, Sir George Buchanan will speak on the Development of Welfare Work among Seamen, and Major R. B. Lloyd, I.M.S., will read a paper on the Wassermann Test in India. The section of the congress dealing with the medical aspects of social hygiene will meet under the presidency of Mr. David Lees, Mr. Kenneth Walker being the secretary. Colonel L. W. Harrison will speak on the Modern Treatment of Syphilis and its Results, and Prof. F. J. Browne on the management of venereal disease at antenatal clinics. In other sections Dr. A. M. Fleming will describe venereal disease among the natives of Southern Rhodesia, and Dr. K. S. Wise will read a paper on methods of propaganda in Trinidad. Dr. Crichton Miller is to deal with the scientific foundations of character training, whilst on the last day of the congress, on Friday, there will be a discussion on the powers and responsibilities of local authorities in the venereal disease campaign, in which Dr. J. R. Kaye, Dr. A. S. M. Macgregor, and Dr. R. M. F. Picken will take part. After a paper on venereal disease in New Zealand, by Dr. Bernard Myers, the congress will close with a discussion on the problem of congenital syphilis in children of school age. Among the special arrangements made for participants will be visits to treatment centres, and the exhibition of films. The amenities will include a congress dinner, at which the Minister of Health will be present. Fuller particulars may be had from the Secretary-General at Carteret House, Carteret-street, Westminster.

INDICATIONS FOR CIRCUMCISION.

IN our last issue Mr. A. J. C. Hamilton and Mr. D. S. Middleton put on record their observations on infants recommended for circumcision during a period of a year at the Royal Edinburgh Hospital for Sick Children. Over half of these patients were found to be suffering from dysuria due, they concluded, in a majority of cases, to ammoniacal dermatitis. They showed how under certain circumstances urine normal when passed becomes infected from the alimentary canal by a bacillus which liberates ammonia from the urea in the urine-soaked napkin. Thus a kind of ammonia fomentation is applied to the bathing-drawers area of the child and dermatitis results. This condition was found to be amenable to the very mild antiseptic action of boric acid when the napkins were impregnated with it; 103 cases of dysuria were treated by this method with "almost uniformly good results," and the number of circumcisions was reduced to half the usual total. Lack of cleanliness is admittedly the first cause of these eruptions, and the mothers of all patients suffering from them were instructed to change their babies' napkins "frequently." A series of control cases would be necessary to determine whether the boric acid is an essential part of the treatment; in the meanwhile, the boric treatment is commendable for its safety and easy application. It appears that the dermatitis which the authors describe is commoner in Scotland than in England, where dysuria in babies, as seen at out-patient departments, is commonly associated with congenital stenosis of the urinary meatus. True phimosis with sufficient stenosis to cause mechanical obstruction to micturition is very rare—there will be general agreement with the authors in this statement—but with true "pin-hole meatus" the case is otherwise. Diagnosis of this condition may be impossible before circumcision, and it is well to remember that dysuria is the commonest of the many symptoms due to stenosis. Regarding circumcision and its substitutes, it is clear that circumcision is no remedy for "ammoniacal storms," but neither is it a remedy for many of the conditions for which it is so lightly performed. It may, in fact, be admitted that the operation is often done unnecessarily. But because the foreskin protects the glans penis from such an outrage against nature as an ammonia fomentation, it does not follow that circumcision stands condemned. The authors' substitute for circumcision when there are adhesions between the glans and the prepuce is probably well known to many careful mothers and nurses and has a definite place in nursery hygiene. None the less, we are sufficiently old-fashioned to think that a small boy should give the very minimum of attention to his external genitalia. That minimum is necessary for cleanliness, but both cleanliness and "unawareness" are, in our view, attained in many children most quickly and most permanently by the ancient operation of circumcision. There are two principal anatomical reasons for advising circumcision in babies—viz., a tight foreskin and a long foreskin. These indications, however indefinite and unscientific, are found to be useful guides in actual practice.

Summer Time, which commenced on April 10th, will cease on Sunday next, Oct. 2nd, at 3 A.M., when the clock will be put back to 2 A.M. The hour 2–3 A.M. Summer Time will thus be followed by the hour 2–3 A.M. Greenwich time. In France the change occurs eight days later.

AT the Royal College of Physicians of London the Bradshaw Lecture, entitled "The Pathology of Pneumonia," will be delivered by Dr. J. F. Gaskell on Nov. 3rd. Dr. Herbert Spencer will give FitzPatrick Lectures on Nov. 8th and 10th, taking as his subject "The History of British Midwifery." Dr. P. C. Varrier-Jones has chosen for his Mitchell Lecture on Nov. 15th "Village Settlements for the Tuberculous." The Lloyd-Roberts Lecture will be delivered at the Medical Society of London by Lord Hewart on Nov. 16th, his subject being "Criminal Law and Insanity." To all of these lectures any member of the medical profession will be admitted on presentation of card. The time of the lecture in each case is 5 P.M.

UNIVERSITY OF LONDON: *University College.*—A course of six lectures on Vision will be given at the College by Mr. R. J. Lythgoe, at 5 P.M., on Mondays and Wednesdays, from Oct. 10th to 26th inclusive. Mrs. P. M. T. Kerridge will give a course of three lectures of Hydrogen-ion Concentration at the College, at 5 P.M. on Fridays, Oct. 14th, 21st, and 28th. A lecture entitled "The Static Reflexes of Magnus: How Animals get right-way-up and keep so," will be given by Prof. A. J. Hall, F.R.C.P., on Tuesday, Oct. 18th, at 5 P.M. (cinematograph illustrations). Admission to these lectures is free without ticket.

DONATIONS AND BEQUESTS.—Mr. Herbert Augustus Hance, late of the King's Remembrancer's Department, Royal Courts of Justice, among other bequests, left £2000 to the Royal Victoria Hospital, Folkestone, to endow two beds. Certain residues of the property also go to the Royal Victoria Hospital.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXLIII.—THE TREATMENT OF INSOMNIA.

I.—GENERAL CONSIDERATIONS.[1]

INSOMNIA, or the inability to secure a sufficiency of normal physiological sleep under favourable external conditions, is often one of the most exacting problems which confronts the physician. A sufficiency of physiological sleep denotes an amount which is normal and usual for a particular individual, although the actual duration and depth of sleep may vary with age and personal constitution. Insomnia implies not only inadequate sleep, but also failure to obtain sound and restful sleep. Three types of insomnia may be distinguished: (1) sleep delayed in onset; (2) sleep interrupted by disturbing dreams or "starts"; and (3) sleep normal in onset, but the sleeper awakens in the early hours of the morning and is unable to sleep again (internocturnal insomnia). Two of these types may be combined in the same patient.

In dealing with any case of insomnia, it is essential to regard the sleeplessness merely as a symptom and to use every endeavour to ascertain the exact nature of the underlying disturbance responsible for its production. Cases of insomnia have been differentiated into two groups: (1) secondary insomnia, in which the loss of sleep results from some form of bodily discomfort—e.g., pain, cough, dyspnœa, &c.; and (2) primary insomnia, in which no definite physical cause for the symptom can be found. In the latter, however, the sleeplessness almost invariably results from some psychical cause, often an alteration in the affective or emotional state of the patient (anxiety, fear, depression) which acts as a persistent mental irritant preventing the onset or interrupting the tranquillity of sleep. It is probable, indeed, that no true primary insomnia ever occurs.

Ætiology.

From the ætiological standpoint the main factors responsible for insomnia may be classified as follows:—

(A) *Physiogenic causes.*—Insomnia resulting from physical discomfort or organic disease.

(1) *Pain.*—Neuralgia, neuritis, arthritis.

(2) *Dyspnœa.*—Cardiac disease, asthma, nasal obstruction.

(3) *Cough.*—Bronchitis, phthisis.

(4) *Frequency of micturition.*—Cystitis, prostatic enlargement, disseminated sclerosis.

(5) *Pruritus.*—Skin diseases.

(6) *Pyrexia.*—Acute specific fevers.

(7) *Gastro-intestinal disturbances.*—Flatulence, palpitation, colitis.

(8) *Circulatory disturbances.*—High blood pressure, cold feet (peripheral stasis).

(9) *Toxic states.*—Chronic sepsis, alcoholic delirium.

(10) *Organic cerebral disease.*—Encephalitis lethargica, meningitis, dementia paralytica.

In some diseases insomnia may result from a combination of several of the above factors—e.g., in pneumonia from cough, dyspnœa, and toxæmia, or in typhoid fever from gastro-intestinal disturbance, toxæmia, and pyrexia.

(B) *Psychogenic causes.*—Insomnia in which no definite physical basis is found.

(1) *Anxiety states* (anxiety neuroses and anxiety hysteria).—Mental conflicts, apprehensions, disturbing dreams.

(2) *Neurasthenia.*—States of fatigue.

(3) *Hysteria.*—Auto-suggestion, somnambulism.

(4) *Compulsion neuroses.*—Obsessions.

(5) *The psychoses.*—Manic-depressive states, paraphrenia.

(6) *Dementia præcox.*

(7) *Confusional states.*

[1] The concluding portion of this article—Therapeutic Measures—will appear next week.

Clinical Aspects of Insomnia.

In dealing with any patient complaining of sleeplessness, a full physical examination is imperative at the outset. Apart from cases in which the symptoms point to an obvious cause—e.g., pain, dyspnœa, pruritis, frequency of micturition, &c.—the digestive, circulatory, respiratory, and excretory systems must be examined, the blood pressure taken, and, lastly, careful attention devoted to the investigation of the nervous system in order to exclude the presence of organic disease. Insomnia is often an early symptom of organic nervous conditions; for instance, in spite of what the name implies—encephalitis lethargica frequently begins with sleeplessness on several successive nights or, preceding the lethargy, insomnia may be associated with mild nocturnal delirium. Inability to sleep may also persist long into convalescence, especially in the Parkinsonian type of the disease, while it is quite common to meet with alterations in the sleep rhythm (the so-called "sleep-reversal") in which the patient is able to sleep quite well during the day, but insomnia occurs at night. The writer has met with several cases in which, the patient apparently having recovered from the encephalitis, a reversal of sleep rhythm was the only remaining symptom. Again, in general paralysis of the insane (dementia paralytica), insomnia frequently occurs in the early stage of the disease and may or may not be accompanied by excitement or exaltation. Later, in many cases, sleep tends to become excessive and even narcoleptic attacks may occur. Of the diseases of the nervous system associated ætiologically with alcohol, delirium tremens is accompanied by absolute sleeplessness in the early stages, while in alcoholic pseudoparesis insomnia is early and pronounced.

Anxiety.

When all physical factors have been definitely excluded and the conclusion reached that the insomnia is one of psychogenic origin, the physician's duty is to investigate all possible causes of mental anxiety. Consequently a full exploration of the patient's domestic, business, social, and sexual life is essential. A mental conflict is the basis of all cases of anxiety hysteria, in which insomnia is one of the most frequent symptoms. In such cases sleep is often disturbed by harassing dreams, usually associated with or symbolical of the factors giving rise to anxiety—e.g., the battle dreams of war neuroses, &c. Later, sleep is also delayed, the patient frequently anticipating the recurrence of disturbing dreams and fearing to fall asleep. The explanation of these phenomena advanced by analytical psychology is that painful or terrifying experiences are repressed; during sleep, however, control over the repressed memories is relaxed and the patient dreams of them either in actual or in symbolical form. Sleep may also be delayed in onset by the conflicts of apprehension, grief, or of business and domestic worries. Anxieties which have been partially obscured by the ordinary occupations of the day, or by attempts at a process of conscious repression, will emerge with excessive insistence and will have full play while the patient lies waiting for sleep to come. Under such circumstances all doubts are exaggerated and all worries intensified; sleep may eventually supervene only to be interrupted by a startling dream in which the anxiety is reproduced with added intensity and the awakening accompanied by distressing emotional manifestations, such as palpitation and sweating. During the stage of semi-consciousness that actually precedes sleep, the patient is sometimes rudely aroused by an apparent vision of startling intensity (hypnogogic hallucinations), and usually connected with his mental conflict, although often in distorted symbolical form; sleep is thus further delayed, if not actually abolished for that night.

Neurasthenia.

Neurasthenia is a term that should be confined to the clinical entity characterised chiefly by rapid and undue fatigue on slight exertion, physical or

mental, and should not be confused with anxiety neurosis nor anxiety hysteria. In neurasthenia sleep is often good, although it is occasionally delayed in onset. Almost invariably, however, the patient awakes unrefreshed, and is often difficult to arouse in the morning. Sleep may be disturbed by nocturnal emissions. Overwork, in the absence of coexisting worry, is a rare and doubtful cause of insomnia. Most cases in which the symptom is attributed to this factor are examples of anxiety states, mild manic-depressive psychoses, or early dementia præcox. Complete insomnia—total sleeplessness on a succession of nights—is very rare, but may occur in association with neurasthenia. In women it sometimes follows the prolonged nursing of invalids, during which period the absence of regular rest has lowered the general health of the patient and destroyed the normal sleep-habit. As this form may endanger mentality, prevention is better than cure.

Hysteria.

Sleeplessness is occasionally a purely hysterical manifestation (conversion hysteria); in such cases the degree of insomnia is often much exaggerated, the patient taking a delight in telling people how little he or she sleeps. Apart from the fundamental psychoneurotic disturbance, hysterical insomnia develops as the result of auto-suggestion, and may disappear quite suddenly, only to reappear in another form—e.g., as hysterical aphonia, headache, astasia-abasia, &c. In some cases the actual origin of the sleeplessness has been physical—for example, pain, &c.—but the cause, having disappeared, the insomnia persists as a hysterical symptom. This occurrence is analogous to the paresis that sometimes persists in hysterical form following an organic paralysis due to nerve injury, the actual lesion, as shown by normal electrical reactions, having recovered. Somnambulism —though not strictly a form of insomnia—may also interrupt the otherwise normal sleep in hysterical subjects. As a rule, the patient has no recollection of somnambulistic acts when awake.

Hypochondriasis.

In hypochondrical subjects insomnia may become a veritable obsession and constitute a definite "compulsion neurosis," the patient believing that under any circumstances it is quite impossible for him to sleep. Apart from hypnotics such cases may require prolonged psycho-analysis to elucidate the cause, and even then relief may not be attained. Similar cases, however, will eventually sleep quite an adequate number of hours, but will continue to assert that they do not sleep.

The Psychoses.

Insomnia is frequently an early symptom in the psychoses, occurring in association with the depressed or excited mental condition of manic-depressive states, in confusional psychosis, dementia præcox, presenile depression, &c. Many examples of persistent insomnia associated with depression are in reality cases of manic-depressive psychosis. To the same class belong the instances of suicide attributed to sleeplessness, some of which if recognised earlier might have yielded to treatment. In such depressed states sleep is considerably delayed, the patient lying awake tormented by melancholy and painful ideas; sleep may also be disturbed by confused dreams, and the patient awake early, fatigued and depressed. In mania, excitement interferes considerably with sleep, and some acute cases are almost completely sleepless. Milder cases suffer from delayed sleep and usually awake too early, although when actually asleep their slumber is often profound. Apart from depression, some cases of senile insomnia are due to flatulence and some to high blood pressure. Many of the aged, however, although sleeping only four or five hours at night, will take naps during the daytime, and so average an adequate amount of sleep in the 24 hours.

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Special Articles.

THE UNIVERSITY OF LONDON: ITS PRESENT CONSTITUTION AND MACHINERY.

BY PERCY M. WALLACE, M.A. OXF.

II.*

THE Senate of the reconstituted University met for the first time on October 24th, 1900. Seven months earlier, very shortly after the promulgation of the new Statutes and Regulations, but actually in anticipation of their formal approval by the Queen in Council on June 29th, an arrangement had been concluded between the Government and the Senate of the old dispensation by which the head-quarters of the University were transferred from Burlington Gardens, where they had been housed since 1870, to the Imperial Institute Buildings at South Kensington. The main central portion of this structure, including the chief entrance, the Marble and Great Halls, the rooms in the tower, and the whole of the east wing, were appropriated to the use of the University; and the new Senate on entering upon office found at their disposal accommodation which it was hoped would prove adequate for their enlarged administrative needs and for the holding of a considerable proportion of their examinations.

Lines of Development.

Their first task was to complete their constitution as laid down in the Statutes and Regulations, so that the full machinery of the University might be set in motion without delay. Fortunately, the Senate contained a large proportion of men and women not only keenly interested in the problem confronting them but also intimately acquainted with the methods and details of University administration. The Chancellor, the Vice-Chancellor, and the Chairman of Convocation, statutory members of the three Standing Committees, were all Fellows of the University,[1] and in that capacity had for some years taken a full share in its government. There were ten other members who were Fellows; the sixteen representatives of the Faculties had all had responsible experience of academic administration in connection with the Colleges and other institutions at which they held their posts; and of the remaining members there were very few who were not similarly qualified in greater or less degree.

Committees were at once appointed to consider the most urgent problems, and in the course of the first eighteen months these were sufficiently dealt with to enable the University to develope fruitfully along the lines prescribed in the Statutes. But fresh requirements and opportunities continued to demand their attention, and have so continued down to the present date, with the result that the Senate now control an organisation far more extensive and elaborate than the Commissioners could reasonably have envisaged in 1900. From the nature of the case these developments have come into operation under varying conditions—sometimes independently, sometimes by a process of mutual reaction; sometimes owing to external benefactions, sometimes through the natural thrust of the normal work—and all that can here be profitably attempted is to indicate briefly the most important and significant items in the process of the evolution of the University during the past twenty-seven years. The summary that follows observes no strict chronological order, but deals with accomplished facts at the conclusion of the period under review.

* Part I. appeared in THE LANCET last week.

[1] Up to the date of reconstitution the Senate consisted of the Fellows; these now retain their title, but not their seats on the Senate.

In spite of the continued abstention of the four Inns of Court, the Senate resolved in 1905 to constitute the Faculty of Laws which the Commissioners under the Act of 1898 had reluctantly felt themselves unable to bring into immediate existence. Provision for instruction in this subject had increased during the proceding five years, and the first roll of the Faculty contained the names of eleven persons teaching at University College, King's College, and the London School of Economics. By this step, taken after prolonged consideration, and at the earliest moment which appeared to them justifiable in all the circumstances of the case, the Senate removed the most striking defect in the new constitution which the University received in 1900—the absence from its curriculum of adequate opportunity for the systematic and philosophical study of the various aspects of Jurisprudence, which has for many centuries been regarded as an essential feature of the Universities of western civilisation.

Incorporation of University and King's Colleges.

Within the first decade of its reconstitution the *personnel* and property of the University received two notable augmentations which of themselves did much to give it an established position as a teaching body. In 1907, after five years' negotiations, University College, founded eighty years before with the title "University of London," but receiving its Charter under its more restricted designation, abandoned its old independence and became incorporated in the University, its whole organisation being transferred to the direct control of the Senate, with the exception of such departments and endowments as belonged to or were held in trust for its Hospital and the Medical School attached thereto. These were placed under separate administrations, the Medical School becoming a School of the University in the Faculty of Medicine on the same lines as the other great medical schools of London, except that the University took over the control of preliminary and intermediate medical studies on the College premises. Three years later a similar scheme was adopted with reference to King's College (including King's College for Women, subsequently transferred from Kensington Square to the Strand, but not the Household and Social Science Department of that College, which retains its specially erected premises on Campden Hill); in this case the Theological Department was also excepted from the general incorporation, and still remains under the government of its own Council as a School in the Faculty of Theology.

It may conveniently be mentioned here that among other institutions under the direct control of the University are the Brown Animal Sanatory Institution,[2] Goldsmiths' College, the Francis Galton Laboratory for National Eugenics, the Bartlett School of Architecture, and the Institute of Historical Research.

More Recent Admissions.

Though applications by institutions for admission to the status of Schools have always been granted only after the most minute investigation of their condition, purpose, scope, government, resources, and equipment both personal and material, the following have since 1900 been added to this category (in some cases only in certain subjects or for limited periods):—Westfield College, the London Day Training College, and the School of Oriental Studies in the Faculty of Arts; the Household and Social Science Department of King's College for Women in the Faculty of Science; East London College in the Faculties of Arts, Science, and Engineering; the London School of Economics (already a School in the Faculty of Economics) in the Faculties of Arts and Laws; Birkbeck College in the Faculties of Arts and Science; the Imperial College of Science and Technology (comprising the old Royal College of Science, the Royal School of Mines, and the old Central Technical College of the City and Guilds of London Institute, now bearing the title City and Guilds Engineering College) in the Faculties of Science and Engineering; and in the Faculty of Medicine the London School of Tropical Medicine, the Lister Institute of Preventive Medicine, the Royal Army Medical College, the Royal Dental Hospital and School of Dental Surgery, the Naval Medical School of the Royal Naval College (Greenwich), the Maudsley Hospital, Bethlem Royal Hospital, and the School of Pharmacy. Of the original Schools in the Faculty of Theology, Hackney College and New College have been merged into one under the title Hackney and New College, and Cheshunt College has ceased its connection with the University in consequence of its removal to Cambridge.

It will be observed that some of these more recent "Schools" in the Faculty of Medicine have been promoted from the list of "Institutions" given last week; to that list there has been added (among others not of special interest to readers of THE LANCET) the National Institute for Medical Research.

Professoriate and Lectorate.

The stages by which the University Professoriate and Lectorate have been established and developed (these constitute almost entirely the roll of the Appointed as contrasted with the Recognised Teachers) are so various and complicated as to preclude precise and detailed summary in this place. A large proportion of these posts owe their creation to the benefactions of individuals or corporations having no direct connection with the University; many to endowments supplied by the governing bodies of its own Schools who undertook to provide, in suitable cases, the minimum salaries prescribed by the Senate in consideration of the appointment by the University of a Professor or Reader holding his or her commission direct from itself; in other cases the Senate have, in recognition of individual distinction, conferred one or other of these titles on existing members of the staffs of Schools or Institutions.

The total number of Professors at the present time is 169; of Readers, 88. Of the Professorships 53, and of the Readerships 14, are held, under the Senate, at Schools in the Faculty of Medicine (including for this purpose the Departments of the two Incorporated Colleges that provide instruction in preliminary and intermediate medical studies). Of the five Professors of Medicine, four—those holding their posts at the Medical Schools attached to the London, St. Thomas's, St. Bartholomew's, and St. Mary's Hospitals—are also the Directors of the Medical Clinics of those Hospitals respectively; the Professors of Surgery at the Medical Schools attached to University College and St. Mary's Hospitals are also the Directors of their Surgical Clinics; and the Professors of Obstetric Medicine at University College Hospital Medical School and of Obstetrics and Gynæcology at the London School of Medicine for Women are respectively the Directors of the Obstetrical Unit at the former and of the Obstetrical and Gynæcological Unit at the latter. There are also Professors of Anatomy at eight of the Medical Schools, of Morbid Anatomy at one, of Bacteriology at three, of Bio-chemistry at three, of Chemistry at three, of Embryology at one, of Helminthology at one, of Pathology at eight, of Pharmaceutics at one, of Pharmacology at one, of Physics at four, of Physiology at six, of Zoology at two; and Readers in Anatomy at one, in Biochemistry at one, in Biology at one, in Chemistry at one, in Histology at two, in Medical Entomology at one, in Medical Protozoology at one, in Pharmocognosy at one, in Pharmacology at one, in Physics at one, in Physiological Chemistry at one. In this enumeration, as in analogous cases, I have confined myself to the Schools in the Faculty of Medicine. But these will serve as illustrations, reflecting the greatest credit on all the parties concerned, of the confidence felt throughout the Schools of the University generally in the sympathy and intelligence which have

[2] This dates from pre-reconstitution days, having been founded in 1871, and may thus be regarded as the pioneer of research work within the University.

characterised the increasing control by the Senate of appointments to the higher posts on the staffs of independent organisations, jealous of their natural rights and proud of their honourable record.

Boards of Advisors.

This gratifying relation between the Senate and the governing bodies of the Schools in the several Faculties has been in great measure due to the establishment of what is generally considered to be one of the most efficient features of the administrative system of the University—the Boards of Advisors. These are, of course, not wholly a novel creation, but in the special form in which they have been constituted in this University they have met with exceptional success. The Regulations governing this matter are necessarily complicated, as in some cases the posts in question are not attached to any particular School or Institution, in others are so attached and the salary is provided by the University, in others are so attached and the salary is provided by the School or Institution itself; in others again it is a question of the conferment of the title of Professor or Reader on a man or woman who is already a Recognised Teacher on the staff of some School or Institution. But for the sake of illustration it will be sufficient to take the common case where the post is tenable at a particular School and the salary is provided, wholly or in part, by the University. There has in the first place been established a permanent (though periodically revised) body of External Experts, persons having no other official relation with the University—three for each of over fifty subjects of University study which correspond generally, but in more specified detail, with those that give their titles to the Boards of Studies enumerated last week and to be further mentioned below. For this purpose the Senate have been fortunate in securing, on the special nomination of the Boards of Studies, the co-operation of a very large number of the leading authorities on the several branches of study throughout the British Isles—many of them occupying Chairs at other Universities. When a particular post is to be filled, a "Board of Advisors" is appointed, consisting of the Vice-Chancellor, the Principal, the three External Experts in the subject concerned, and four persons nominated for this particular case by the School to which the appointee is to be attached. The Board so constituted is permitted to advertise the post or not as it thinks fit, and in recommending any person for appointment by the Senate is directed to have regard to his contributions by research to the advancement of science or learning, to his powers as a teacher, and generally to his eminence in his subject or profession. To put the matter more bluntly than could with propriety be embodied in the Regulations, the External Experts are relied upon to guarantee, in the case of each man reported as eligible, that his professional status is adequate for the post in question, and the colleagues with whom he will be most intimately associated have the opportunity of indicating among those so guaranteed the individual with whom they would find it most congenial to work. The report of the Board is sent simultaneously to the Academic Council and to the governing body of the School at which the post is tenable, finally reaching the Senate together with the reports of these two bodies; and no appointment is made without the concurrence of the latter, as the authority most directly concerned. This procedure is adopted with the appropriate modifications when the post in question falls under one of the other categories indicated above, or when the matter in hand is the conferment of a title rather than the appointment to a Chair or Readership. Other Regulations under this heading are designed to secure equitable conditions of tenure and adequate leisure, equipment, and assistance for the prosecution of research. The minimum salary for a whole-time Professor is £1,000, and for a whole-time Reader £500; but in many cases the salaries actually paid are considerably higher—thus, for instance, Professors at Medical Schools who are also Directors of Clinical Units each receive £2,000.

The original roll of Recognised Teachers was, as has been already stated, constituted by the Commissioners themselves with a total membership of 440 men and women. Many of these have in course of time been promoted to the rank of Appointed Teacher, though this category consists to a large extent of persons brought on to the University staff from outside. The total number of Recognised Teachers at the present time is about 860, of whom 362 are registered as holding their posts at one or other of the Medical Schools. Medicine thus—for reasons already given—retains its numerical preponderance in the *personnel* of the University. But, except for what may be for this purpose regarded as one-subject Faculties (Theology, Laws, and Music), the staffs of the Schools and Institutions generally have grown to a noteworthy degree during the past twenty-seven years. This increase has been in great measure due, not only to the natural ambition of the Schools to make provision for their ever more numerous students, but also—and this applies specially to the growth of the Professoriate and Lectorate staff—to the intensified specialisation of the several subjects of the University curricula. Posts are now created in departments and even sub-departments of branches of study which until a comparatively recent date were deemed susceptible of adequate treatment by one man.

Increase in Boards of Studies.

This tendency, which is properly and indeed inevitably consequent upon the continuous cleavage of all progressive investigations, has been increasingly reflected in the number of the Boards of Studies. It will be remembered that the Commissioners had recommended the early constitution of thirty-two specified Boards. Of these it was decided to postpone for the present those in Archæology and Palæography, Laws, Pharmacy, Ethnology, and Marine Engineering and Naval Architecture; but the other twenty-seven were constituted with all speed—actually on December 19th, 1900, within two months of the first Meeting of the Senate under the new dispensation. The total membership of these twenty-seven original Boards was 374 (305 Teachers and 69 external experts). Year by year, as the development and specialisation of the work of the University demanded, the existing Boards have been enlarged, re-cast, and divided, and new Boards have been created, until at the present time the Register contains no less than forty-five, with a total membership of 1196 (986 Teachers and 210 external experts).[1] It is both interesting and significant to note the precise nature of these adjustments of and additions to the ultimate sources of expert guidance in the complicated fabric of the University. The Board of Laws was constituted in 1905, contemporaneously with the corresponding Faculty to which reference has been made above. Three of the others specified by the Commissioners have also been established—Pharmacy, Archæology and Palæography, and Ethnology, though of these the second bears the sole title Archæology and the third has been re-named Anthropology. Marine Engineering and Naval Architecture is thus the only definite "subject of University study" designated by the Commissioners as requiring a separate Board of Studies which has not yet found its place in the London curriculum. On the other hand, Mediæval and Modern Languages and Literatures has proved, both in scope and in treatment, too extensive an area for effective control by one Board, and has accordingly been subdivided under three, which deal respectively with the languages and literatures of the English, the Romance, and the Germanic peoples. Similarly, Physiology and Psychology form now the provinces of separate Boards; as do also Architecture and Fine Art. In addition, there are now in operation ten Boards not contemplated by the Commissioners—

[1] In both categories some members have seats on more than one Board.

Human Anatomy and Morphology, Veterinary Science, Sociology, Pharmacology, Statistics, Horticulture, Slavonic Studies, Comparative Philology, Military Studies, and one which has for its purview "the Principles, History, and Method of Science." This last-named, constituted four years ago, was with special and prolonged care designed to embrace not only the natural and mathematical sciences but also logic, ethics, history, pedagogy, economics, linguistics, archæology, scholarship, and medicine. The inclusion of so wide a field within the purview of one Board might at first seem to indicate a reaction against the spirit of specialisation; but the Senate were actuated by the recognition that the labourers in all fields of scientific enquiry are members one of another, and that a comprehensive consideration of the fundamental principles, the methods, and the progress of trained investigation is in itself a specialised industry, properly and profitably to be constituted a subject of separate study—the higher strategy in the campaign waged by the University against ignorance and narrowness of outlook.[4]

Maintenance of Standard.

It must not be supposed that this remarkable increase both in the number and still more in the *personnel* of the various bodies that constitute the framework of the reformed University implies any degradation of standard. On the contrary, the successive records of the Senate bear ample witness to the cautious elaboration of the machinery employed, whether imposed by the Commissioners or designed by themselves, and to the scrupulous care with which appointments and admissions are eventually made. And it is eminently satisfactory to learn that this jealousy for the honour of the organisation entrusted to its care has won the admiration of the various authorities, whether within the University or without, who have come under its operation. Admission to the status of a School is an honour which several governing bodies have been glad to achieve by providing the required additional outlay upon libraries and other equipment, and many a Teacher in Institutions throughout the metropolitan area has owed his increased salary or his restricted hours of work or his improved facilities for research to conditions imposed by the Senate upon his employers who had applied for his recognition.

The history of the Faculties during the period under review has not been in all respects what the Commissioners appear to have contemplated. As advisory bodies they have to a certain extent fallen between two stools. The Boards of Studies are more intensively expert in the details of curricula and the qualifications of Examiners, and the Councils are in a stronger position in matters that concern the more comprehensive co-ordination of studies. Moreover, the Councils must consult the Boards of Studies, but need not consult the Faculties unless they desire, though every Board must communicate to the Faculty or Faculties with which it is in relation the text of any report which it sends to either of the Councils. A further difficulty arises from the structure of the Faculties themselves. In the cases of Theology, Laws, Music, and Economics, the Faculty is hardly more (sometimes even less) than the corresponding Board of Studies without the external experts who sit upon the latter; in a modified degree this is true also of Engineering, where three Boards are concerned; on the other hand, in Arts, in Science, and especially in Medicine, the Faculty is far too large for the regular and convenient consideration of detailed business.[5] This disadvantage in the case of the three last-named bodies has led to the establishment of Faculty Boards, each consisting entirely or almost entirely of representatives appointed *ad hoc* by the associated Boards of Studies; these bodies are summoned as required, and are in some cases able to assist the higher authorities with correlative advice on the business of the Faculty itself, midway between the restricted sphere of the Boards of Studies and the more extensive purview of the Council. But there is a general feeling that these Faculty Boards are of the nature of a fifth wheel to the original coach, and that the urgent need—all legitimate interests being adequately safeguarded—is for the speeding up of the rate of advance rather than for any addition to an already inevitably cumbrous procedure. Thus the greatest influence regularly exercised by the Faculties themselves is in their capacity as electoral bodies. On their sixteen representatives on the Academic Council lies almost wholly the responsibility of digesting, correlating, and laying before the Senate all schemes, amendments, and developments affecting the Schools and Institutions, the Teachers (Appointed or Recognised), and the curricula, examinations, and degrees of Internal Students.

But the purview of the work of the University in this department has extended far beyond the immediate regulation of courses leading to graduation. Lack of space, however, precludes more than the barest mention of some of these newer features. To the Brown Animal Sanatory Institution, Goldsmiths' College, the Francis Galton Laboratory for National Eugenics, the Bartlett School of Architecture, and other foundations incidental reference has already been made; there is in each Faculty an elaborate system of Advanced Lectures delivered every year by some of the leading scholars and scientists of Europe and the United States; facilities for post-graduate study and research, and for the publication of their results and of students' theses, are constantly provided as far as possible; a series of carefully guarded Diplomas has been instituted in a variety of subjects—Anthropology, Geography, Journalism, Fine Art, Librarianship, Theology, Town Planning and Civic Architecture, Town Planning and Civic Engineering, Social Administration, and others; Libraries of all kinds, general and sectional, have been established and enlarged; and other illustrations, particulars of which may be found in the Annual Reports and other publications, show how fresh demands have ever met with fresh and fruitful response.[6]

Concentration of Preliminary Studies.

With all this record of achievement and advance there is one failure that calls for mention—or, if not failure in the strict sense, one instance in which the Senate have not been able to carry out in full a measure upon which the Commissioners laid special stress. In one of their Statutes they empowered the Senate, "with a view to greater efficiency and economy," to encourage among the Schools of the University the provision of common courses of instruction in suitable subjects, with consequent interchange of students; and added the direction:—"in particular the Senate shall use its best endeavours whenever practicable to secure such common courses of instruction for Internal Medical Students in the preliminary and intermediate portion of their studies under Appointed or Recognised Teachers at one or more centres." In an attached Report they pointed out how uneconomical was the system by which each medical school provided full instruction, not only in the strictly professional portions of the curriculum, but in Physics, Chemistry, Biology, Anatomy, and Physiology. The classes were small, the remuneration of the teachers inadequate, and the whole machinery an unnecessary burden upon the schools. The objections to concentration were frankly acknowledged—that it was essential that these subjects should be taught not as pure sciences

[4] Portions of this paragraph have been adapted to present conditions from the Report of the Principal Officer for the Year 1922–23.

[5] The membership of the several Faculties at the present time is as follows:—Theology, 20; Arts, 207; Laws, 20; Music, 17; Medicine, 405; Science, 242; Engineering, 60; Economics, 46. The Faculties of Arts, Medicine, and Science are concerned with the work of 21, 9, and 21 Boards of Studies respectively.

[6] It need hardly be added that many of these developments have been made possible only by the generosity of benefactors. I have not, either in this connection or elsewhere, been able to give any details of this most gratifying feature of the success that has followed the reconstitution of the University.

but with special reference to medical studies, and that great benefits resulted from continuous personal intercourse between teachers and students and the establishment of an *esprit de corps* from the beginning of the period of study. On the other hand were urged the disproportionate expensiveness of a system of small classes, each requiring elaborate equipment, the higher general standard of tuition that would accompany concentration, with eminent experts in charge of the several subjects, and the liberation in each school not only of space but also of human energy that could more profitably be devoted to clinical instruction. Weighing all the evidence before them, the Commissioners declared themselves in favour of concentration, but, failing to secure in this matter the support of the several medical schools, they were unable to frame Statutes to give compulsory effect to their views. Hence the Statute cited above is of a permissive and recommendatory character only; but the Report emphasises strongly the urgency of effecting such a concentration of teaching, and this not only in the specific "preliminary" and "intermediate" subjects indicated above, but also, should such an extension be found practicable, in Pathology, Pharmacology, and the various branches of Hygiene and Public Health.

As early as possible after they had got definitely to work, the Senate referred this portion of the Commissioners' Report to the Faculty of Medicine, who conducted an exhaustive enquiry into the whole question. After prolonged consideration of the views of three expert Committees, the Faculty declared their approval of the concentration of the preliminary and intermediate studies in two or more institutions; and on their advice the Senate prepared a detailed scheme for carrying it into effect, mainly by the erection, equipment, and endowment of an adequate and comprehensive Institute in the neighbourhood of the Central Office of the University. A large sum of money was collected for the purpose, and for a time the prospects of its realisation were most favourable. But as the details were further developed opposition arose among some of the Schools concerned, and eventually it was found that, owing to various apprehensions and difficulties of adjustment,[7] the scheme was no longer generally regarded as either desirable or practicable in the full sense of the Commissioners' Report. It had consequently to be abandoned, and the donations returned. This was a great disappointment to many who had believed, with the Commissioners, that the concentration they had recommended would have proved both efficient and economical. At a later stage it was adopted in a modified form by some of the Schools acting independently of the designed central control, and at the present time the students at Westminster, St. George's, Charing Cross, and King's College Hospitals are free to attend one of the University centres (University College and King's College) for instruction in their preliminary and intermediate work.[8]

But, if this particular application of the principle of common courses of instruction has for special reasons not been found practicable, analogous schemes have been, and continue to be, successfully adopted in other Faculties. As typical illustrations may be mentioned the concentration of Architecture, Dutch, and the Scandinavian Languages at University College, of Slavonic Studies at King's College, and of all Oriental Languages at the School of Oriental Studies; while Inter-collegiate Courses are conducted at various Schools in French, Italian, Geography, and other subjects, whereby the advantages anticipated by the Commissioners have to a considerable extent been secured.

[7] Among many other authorities, Lord Lister proclaimed himself as definitely hostile to the proposal.

[8] Mention may be made in this place—though there is no historical or organic connection between the two schemes—of the Physiological Laboratory which was established in the University Central Office in 1902 through the enterprise and devotion of a number of teachers of that subject. This was concerned, not with the instruction of undergraduates, but with the provision of advanced lectures and the prosecution of research; and had to be closed down in 1920 in consequence of the inability of the University to supply any longer the required accommodation by reason of the continuous increase of its own administrative staff. In this case also a large proportion of the donations had to be returned to those whose generosity had originally provided the equipment.

External and Extension Work.

If in what I have written in these two articles I have confined myself almost entirely to the development of the Internal side of the University, it must not be supposed that I underrate either the importance or the progress of the other two main departments established on parallel lines by the Statutes of 1900. I have not attempted to sketch, even in outline, the history of the University at large during the past twenty-seven years. I have endeavoured rather to describe its fabric and machinery—to show what its constitution is, and how it has worked, both within the scope specifically appointed for it and by natural evolution beyond the immediate limitations of that scope. It was the new department—the Internal—that was then created, and that has since increased. The External side of the work of the University was in full and beneficent operation for half a century before the reconstitution of 1900, and—except for the establishment of the Boards of Studies—it has neither needed nor received any essential amendment since that date. As far as the readers of THE LANCET may be considered directly interested, it is sufficient to state that, *pari passu* with the Internal side (though with the necessary divergences), it has aimed at keeping abreast of the ever-increasing requirements of its province, whether by the adoption of Regulations dealing with fresh branches of specialised study, or by the periodical revision, at once cautious and sympathetic, of the list of Institutions (not only within these islands but throughout the Empire) from which, with the approval of the Privy Council, Certificates may be received, whether of courses attended or of appointments held, in connection with the several degrees in Medicine and Surgery. Its most notable development of recent years, that by which External Students are on request advised by experts with regard to their private work, to local facilities for education, and especially to means of relating their way of life to University studies, appeals from the nature of the case hardly at all to those seeking degrees in Medicine, however successful it has been in respect of other avenues to graduation.

For the same reason, and to a greater extent, the activities of the Extension Board do not fall within my present purpose. It has stood outside the elaborate machinery devised by the Statutes of 1900 for the regulation and co-ordination of the Internal and External Departments, and has thus been able with greater freedom to follow the lines of advance from time to time open before it. It has maintained with marked success the administration of University Extension work in London and the suburbs, having upon its Panel close upon seventy names, besides Supplementary Lecturers, and providing at about ninety centres continuous courses of lectures on History, Literature, the Fine Arts, Philosophy, and the various branches of Natural, Economic, Political, and Sociological Science. It is also concerned with the supply of Tutorial Classes for Working People throughout the metropolis; and has further within its province a carefully graded system of inspection and examination of secondary schools, the organisation of annual Summer Courses for Foreigners, and the award of a number of Diplomas and Certificates in subjects so diverse as Religious Knowledge, Psychological Medicine, Nursing, and Dramatic Art.

It is not, therefore, through negligence, but by the nature of my present limitations, that I have not dealt in full with these two departments, or at all with various other features of the work carried on by the Senate. My aim has been, not to dilate upon the character of the services which the University has rendered to the nation since its reconstruction, but to indicate under what system and by what agencies—with special reference to medical study—those services have been brought into operation.

THE WORLD POPULATION CONFERENCE AT GENEVA.

AUGUST 31ST–SEPT. 3RD, 1927.

(FROM A SPECIAL CORRESPONDENT.)

THAT changes in the quality and quantity of the populations inhabiting the different countries of the earth have a fundamental bearing upon the future of the human race is obvious. Yet consideration of these changes has so far played but little part in those adjustments of international relations by which, in the last nine years, it has been sought to prevent wars. Hence the conference upon world population which sat in Geneva from August 31st to Sept. 3rd, attended by some 150 delegates from over 30 countries, has especial interest as being the first of its kind that has taken place.

In his opening address on Wednesday, August 31st, Sir BERNARD MALET, the chairman of the conference, made it clear that the objects of the conference were strictly impartial and scientific, and that propaganda was to be rigorously excluded from the debates. This statement of aim required emphasis, because it has been felt in some quarters that the promoters and most of the chief speakers of the conference were advocates of birth control, and that behind a façade of simulated scientific disinterestedness they had concealed the real motive of the conference—namely, birth control propaganda. The subject of birth control was therefore not discussed at the conference. So elaborately, in fact, was it avoided that certain aspects of the population question which, for the economist, possess scientific interest and which are rich in consequences for the racial future of mankind, were not touched upon.

The conference proper opened with a paper by Prof. RAYMOND PEARL upon the

Biology of Population Growth.

The substance of his argument was that the increase of the fruit fly, *Drosophila melanogaster*, and of yeast cells, grown under experimental conditions in bottles and test-tubes, could be graphically represented by a curve called, by its original discoverer, Verhulst, the "logistic curve." The multiplication of a wide variety of organisms, including human beings, was held by Prof. Pearl to conform to this curve.

But his exposition of the logistic curve was not devoid of ambiguity. Population growth is affected by three "primary variables"—natality, mortality, and migration. Upon these primary variables, however, there act "various secondary environmental factors," such as "food-supply, the economic situation, and social forces of various sorts." Now it is of the essence of Prof. Pearl's teaching that the influence of these secondary factors in modifying population growth is small. The chief difficulties of this argument can be conveyed by the following extract from Prof. Pearl's paper: It is not unreasonable to compare populations of fruit flies and human beings, because "populations, of whatever organisms, are, in their very nature, aggregate wholes, and behave in growth and other ways as such. The elements of their behaviour arising out of this condition of aggregate wholeness are just as true in populations composed of individuals of one species as in those composed of individuals of another. Perhaps the most impressive thing which has come out of the statistical study of human population growth is the evidence that the steady onward march of this growth is *not sensibly influenced by the host of economic and social events which are supposed of logical necessity, to affect it.*" (Italics mine.)

Two questions are raised by this quotation. In the first place, what, for human beings, is an "aggregate whole of population"? There is really no analogue, unless possibly that of a community living on a desert island cut off from the outside world, to be found among human beings for Prof. Pearl's bottled flies. What is the criterion of the "aggregate whole" of human population—the family, the tribe, the race, or humanity at large? Are the delimitations of the "whole" racial, cultural, economic or geographical in nature, or all simultaneously? Could, for instance, the British Isles, depending for its existence on its trade, be regarded as an aggregate whole in any sense comparable to the bottled colony of drosophila? The term "aggregate whole" clearly requires, but as clearly was not given, definition.

In the second place, what is meant by the statement that the growth of a population is not influenced by social and economic events? The industrial revolution was such an event. So was the agricultural development of the New World.

The trebling of the population of the British Isles in the last century is clearly attributable to these events. What, then, is meant by the statement that "secondary environmental factors," such as food-supply, have an influence which is "not sensible" upon population growth?

It was not surprising to find that Prof. Pearl's paper met with considerable criticism. This criticism for the first time reflected those differences in national attitude which were further manifested at every phase of the conference.

By American speakers, with their national leaning towards statistical and graphic formulations, the paper was hailed as a fundamental contribution which placed the problem of population growth upon a basis of scientific and mathematical fact. By speakers belonging to other nationalities, many of whom mollified their remarks by prefatory expressions of cordial personal esteem for Prof. Pearl, his paper was regarded, in its bearings upon human population, as a pseudo-scientific irrelevancy. The multiplication of flies in bottles, it was argued, protected from enemies and fed upon a controlled quantity of synthetic pabulum, had little bearing on the multiplication of human beings, or even of animals in a state of nature. It is probable that much of the criticism arose from misunderstanding, since Prof. Pearl was careful, in one part of his paper, to disclaim any desire to apply to human beings conclusions reached from observations on fruit flies. But in another passage he seemed to claim that his conclusions were applicable to human beings.

The next paper was read by Dr. H. P. FAIRCHILD, professor of sociology at New York University, upon the subject of

Optimum Populations.

His conception of the optimum population of a given country was that of a product of four factors, of which three are variable and one is fixed. "Land," used in the most comprehensive sense, is the factor which is fixed. Population, the state of the arts, and the standard of living are the factors which are variable. These terms were clearly defined by Prof. Fairchild whose thesis was that the criterion of the "optimum" of population should reside, not in the mere achievement of large numbers in relation to the available land and resources, but in a high standard of living, most helpfully considered in terms of family units. It is clear that the conception of an optimum population is fundamental to any effort to secure the fullest expression of social harmony and happiness within any community. Prof. Fairchild's paper served a valuable purpose in defining and sharpening this somewhat vague conception. His general thesis that the optimum should be conceived in cultural rather than in numerical terms, passed unchallenged.

Food and Population.

A paper on this subject was read by Dr. E. M. EAST, professor at Harvard University.

His argument was as follows: As far as can be foreseen at present, there exist on the earth some 13,000 million acres of tillable soil, capable of supporting, at the rate of 2½ acres per individual,

some 5000 million people. At the current rate of increase, this figure will be reached in about 100 years. At the present moment there exist in Europe some 80 to 85 million people who have to be fed with imported food. At present the only countries which make the exportation of food their primary business are Canada, the Argentine, and Australia. These countries are doubling their populations in 25 to 30 years, and are rapidly becoming self-supporting in the matter of manufactured goods in the meanwhile. Hence we are within measurable distance of a time when the present food-exporting countries will, after feeding their enormously augmented populations, have little food to export to the Old World and to Japan.

Hence it behoves these countries to become more self-supporting, either by increasing their food-production, or by limiting their numbers. Prof. East's conclusions were vigorously attacked by speakers from European countries, who seemed to treat him as if he were advocating American non-coöperation with Europe rather than prophesying from more or less incontrovertible data. The most ferocious onslaught came from Dr. Jean Bourdon, of the Sorbonne.

On the morning of Sept. 1st a paper was read by Prof. CARR-SAUNDERS, of Liverpool University, upon

Differential Fertility.

By this term is meant the varying rates of contribution to the adult ranks of the next generation made by different groups of the population. It was shown by this paper that in England those classes whose occupation is intellectual rather than manual, and those classes whose intelligence is shown by intelligence tests to be relatively superior, contribute less to the next generation than do the labouring classes and those classes whose intelligence, measured by intelligence tests, is seen to be of a relatively low order. Further, it was shown that this discrepancy in the contributions made by the different classes is increasing with the lapse of time.

Prof. Carr-Saunders was followed by Prof. LUCIEN MARCH, of Paris, Prof. GROTJAHN, of Berlin, and Prof. METHORST, of The Hague. These speakers described changes in their respective countries comparable to those that had occurred in England.

In a paper read on the afternoon of Sept. 1st, entitled Fertility and Sterility in Relation to Population, Dr. F. A. E. CREW, of Edinburgh, described the various factors which, affecting fecundity, fertilisation, pregnancy, and parturition, determine the reproduction rate of a given generation. The paper was of a non-controversial nature.

Other Papers.

Other papers were read by Mr. ALBERT THOMAS, who spoke in French, on International Migration and its Control, and by Mr. E. J. LIDBETTER, on Heredity, Disease, and Pauperism. These last contributions were in certain respects the most important of the conference. The painstaking investigations of the last speaker have led him to the conclusion that persons of low-grade stock conform in their marriages to the principle of "assortative mating." "The evidence," said Mr. Lidbetter, "suggests that defectives and low-grade types are closely intermingled and overlap, but that they preserve their general characteristics from generation to generation and *probably do not often, by intermarriage, initiate good stocks or derive strength from that source.* (Italics mine.) A few thousand family stocks probably provide the great burden of inherent defectiveness which the community has to bear." The fertility-rate of these types is high and Mr. Lidbetter says of them: "We may be assured that the rate of reproduction of these groups much exceeds that of any other section of the community." Further, they have not responded to that general rise in culture which has taken place in the last 100 years. During this period their "family conditions do not appear to have greatly altered, except that as their numbers have increased, they have not enjoyed that improvement in the standard of living which has been common, and the measure and intensity of their dependence upon the public has increased." This last observation has an important bearing upon the contention that these types are best helped by improving their environment.

Conclusions.

On the morning of Saturday, Sept. 3rd, it was resolved to form an international committee for the study of population problems.

It is difficult to sum up the achievements of the conference or even to draw attention to any conclusions upon which unanimity was reached. Certain delegates, especially those coming from Catholic countries, spoke as if they believed that the problems of population should be left to take care of themselves. Those who, for religious or other reasons, would let population problems take their natural course, usually give scientific expression to their beliefs by postulating "biological laws" through the operation of which nations wax and wane, the wealthier and more intellectual classes die out, and by which the other anomalies of differential fertility are to be explained. In face of such "laws" it is clearly useless, presumptuous even, for man to attempt to direct his biological destiny. Hence those who believe that "laws" govern population growth are usually opposed to eugenic ideals of racial improvement, and to the ideal of realising an "optimum" of population by any process of restriction or selection. This attitude was well represented at the conference by Prof. Corrado Gini, of the University of Rome. By speakers, on the other hand, from Anglo-Saxon countries and from Germany, it was generally believed that with the progress of knowledge and the enlightenment of public opinion it would be possible for man largely to regulate his biological future. To those who believe that, if civilisation is to be saved from disaster, "natural" selection must be replaced by "rational" selection, the ideal naturally commends itself that each country should strive to achieve a quantitative optimum—conceived along the lines indicated by Prof. Fairchild—with qualitatively optimal people. This last can only be realised by eugenic endeavour. It was interesting to English listeners, and doubtless agreeable to French listeners, to hear Prof. Grotjahn, of Berlin, state that the population of Germany is now approximately stationary, and outline for his country a detailed scheme of positive eugenics, concluding with the remark: "Then we should bring to an end the stupid fertility in those strata which have least means, room, or time for the upbringing of their offspring."

And it was noteworthy that the only suggestion that international pressure might eventually be brought to bear on a country to compel it to keep its population within limits compatible with the security of its neighbours, came from a Frenchman. In the words of Mr. Albert Thomas: "International rules concerning naturalisation and assimilation accepted by common consent, might, failing a policy of compulsory birth control, form a protection against excessive growth of certain sections of the world population where such growth may represent a danger to neighbouring communities."

PAPWORTH VILLAGE SETTLEMENT.—Dr. P. C. Varrier-Jones, medical director, in his report for 1926, stated that there were 127 children in the colony at the end of the year, of whom 81 were between the ages of 12 and 3. "After 11 years' experience," he writes, "no child (and some have now come of age) has, while a member of our community, contracted tuberculosis of the lungs, glands, bones, or joints, or indeed in any known clinical form. We have had no single case of tuberculous meningitis. Those who have left the settlement and seek education or employment elsewhere are all free from the disease." Dr. Varrier-Jones claims that this system has cut the vicious circle of infection, rendering the family not only free from infection but highly resistant to the disease.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Insurance not Charity.

IT is interesting to see that at the recent meeting of the Scottish Association of Insurance Committees the President should have found it necessary to say that, after 15 years of administration, perhaps the most evil of all the forms of opposition to national health insurance is that which may be frankly described as snobbery. Some young people, he said, would have nothing to do with the Act because they looked upon its benefits as a kind of charity or pauper relief.

The claim made in the early days for contributory insurance was that it was essentially different from "rates," and that the recipients of benefits valued them more because they had paid for them. This was even regarded as the groundwork of a better system of "moral responsibility," and was supposed to evade the social degradation which came from providing health organisation and service out of the rates. This delusion has gone by the board, and now even benefit under unemployment insurance is nicknamed—quite wrongly—"the dole," while all forms of benefit under this, or under the national health insurance, are regarded in the same impersonal way as the services of gas, water, electricity, and the public health service generally. Insured persons, notwithstanding the moral difference supposed to be generated by the contributory system, go indifferently to child welfare centres, out-patient departments, general hospitals, and maternity homes and hospitals. The result to the individual is much the same whether the tax be an ad hoc tax paid in a special way as contributions, or a local rate paid on the rental, or a tax paid on tobacco or on income. In the end he acts on the idea that he is getting something for nothing whenever he does not (as it were) pay coin over the counter for his requirements.

Reorganisation of the Board of Health.

One of the motions brought before the Association's annual meeting was :—

"That the Conference view with disquietude the proposals made by the Government in the reorganisation of Offices (Scotland) Bill, to the effect that the Scottish Board of Health should be abolished, and the work inter alia of national health insurance in Scotland conducted by a department under a secretary responsible to the Secretary of State for Scotland, and regard as necessary for the proper conduct of the Local Government in Scotland that the duties of supervision should be undertaken by a responsible Board situated in Scotland."

This motion seems to be founded on some misunderstanding. The existing Board is subject in everything to the President, who is the Secretary of State for Scotland, and the new organisation, whatever form it takes, will be in the same position. But the above motion was supplemented in a way that materially altered the effect of it. A motion was moved :

"That, in the event of the Government pressing for the abolition of the Scottish Board of Health, the conference instructs the executive to take such steps as are necessary to secure by amendment of the Bill, or otherwise, that the Department of Health, which will take the place of the Board, shall be established on the lines of the Scottish Education Department, so that the existing relationship between the Scottish Board of Health and the Secretary of State for Scotland can be maintained by the Secretary of State, as Minister, being the responsible head of the Department."

Sir Henry Keith, whose unrivalled experience in Scottish local government gives weight to his view, said there was no intention, so far as he understood the Bill, that the seat of office, so far as Scottish administration was concerned, should be removed from Edinburgh. If there were any such intention it would be strenuously opposed by all representative associations in Scotland.

In effect, the addendum and the motion together support the Government's proposals. The second reading of the Bill will be completed, it is understood, in the autumn session, and the Bill will be passed.

Sir John Lindsay.

By the death of Sir John Lindsay, late town clerk of Glasgow, Scotland has lost a man of great intellectual acquisitions and force of character. It is more than 30 years since I first met him at meetings of the Sanitary Association. He was heart and soul in favour of the modern public health movement, and when he ultimately became town clerk everybody realised his strength as a municipal administrator and reformer. He was an untiring slave in the service of the corporation and the nation, and his evidence before the Housing Commission was masterly. History, as yet, is not in the habit of recording what the commonwealth owes to men of this kind.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Tuberculosis Medical Officers' Association.

THE annual meeting of the Tuberculosis Medical Officers' Association was held in Dublin last week, and the Association added to its usual programme the holding of a scientific meeting to which members of the profession were invited. Dr. McMahon, of New York, showed an interesting series of X ray slides illustrative of the changes that take place in the lungs in the healing of pulmonary tuberculosis. Dr. Boyd Barrett, one of the medical inspectors of the Department of Local Government and Public Health, followed with a paper on the Control of Bovine Tuberculous Infection. He quoted investigations proving that bovine infection is the cause not only of human disease but of death. He said that it was necessary that facilities for the bacteriological examination of milk should be provided, and suggested the application of the Swedish law, which made it imperative that persons working in dairies or concerned with the sale of milk should be in possession of a medical certificate, delivered less than a year before the time of their engagement, stating that they were not suffering from contagious tuberculosis, with severe penalties and stoppage of sale of milk for non-compliance. Every dairy farm and dairy should be registered, and registration should be followed by inspection by a veterinary surgeon, so that all diseased animals might be discovered. In this way the elimination of advanced cases of tuberculosis could be commenced, leading subsequently to the separation of healthy from tuberculin-reacting cows. Thus, also, the basis would be laid for the ultimate objective of the rearing of tuberculosis-free herds. The next step would be the testing by tuberculin of the remainder of the herd, and next the milk of cows giving the reaction to tuberculosis should be tested for the presence of tubercle bacilli.

Dr. P. J. Burke, tuberculosis medical officer of County Sligo, read a short paper on the Costs of Tuberculosis. He quoted estimates to show that the average life lost to the nation by tuberculosis had been valued at from £500 to £1500 by different authorities. Taking £300 as a minimum figure, the cost of each illness terminating in death might be counted as £360. Each life lost, therefore, deprived the country of the value of at least £660. The reduction of tuberculous mortality in the year 1925 as compared with 1915 meant a saving for the nation worth £1,354,320. The cost to the nation for the year 1927 he estimated at £4,347,272, while the money at present spent on county tuberculosis schemes was about £75,000.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1926 statistics of six counties :—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Diarrhœa under 2 years.	Infant mortality.	Maternal mortality from childbirth.
Essex .. .. .. (991,700)	16·8	9·9	0·76	1·37	1·4	1·5	8·2	52	3·0
Surrey .. .. .. (773,900)	14·7	10·0	0·66	1·44	1·5	1·4	3·4	50	3·9
Warwickshire .. (370,600)	17·5	10·5	0·82	1·38	1·4	1·5	3·7	55	3·3
Leicestershire .. (279,700)	17·4	10·5	0·88	1·23	1·3	1·5	4·5	58	3·5
Cumberland .. (217,400)	19·9	12·6	0·76	1·42	1·9	1·8	9·7	72	6·2
Northamptonshire (214,200)	15·8	11·4	0·76	1·60	1·6	1·8	2·6	52	4·7

Essex.

Dr. W. A. Bullough states that the tuberculosis staff has been strengthened during 1926 by the appointment of Dr. W. Burton Wood as consulting officer (part-time) for pulmonary tuberculosis. Dr. Wood has visited all the dispensaries and sanatoriums in the county, and also the sanatoriums outside the county which receive Essex patients. The report contains a contribution from Dr. Wood on "tuberculous infection in early life," which concludes with the suggestion that special cards should be issued in order to facilitate the following up of children threatened with tuberculosis. He would use these cards for four classes of children : (1) those who had been contacts of cases of open tuberculosis ; (2) those who had suffered from any tuberculous disease ; (3) the so-called pre-tuberculous children ; and (4) those whose appearance suggested the type of constitution usually associated with a low resistance to tuberculous infection.

When these children left school the special card would be sent to the tuberculosis department at Chelmsford for future reference. The report also contains extracts from the report of Dr. J. Pearse, of the Ministry of Health, on the Essex combined medical service resulting from an inquiry made early in 1926. This scheme is an attempt to provide a unified public health service by appointing the local medical officer of health assistant to the county medical officer of health for the public health services performed by the county. Dr. Pearse's report is generally favourable as regards the availability of a specially trained officer, coördination, and the avoidance of overlapping. One officer residing in the district responsible for all public duties has the opportunity of wider influence. Dr. Pearse deals with some of the objections which might be met in various ways. Dual control has caused no special difficulty, though there is a feeling that the county council duties receive first consideration. Some of the districts are too big and others are too small. The salary of £700, even if it rises to £800, is not attractive as a permanency, and the question arises whether the future prospects of these officers are helped by the title of *assistant* county medical officer. The responsibility and salary do not perhaps compare favourably with those usual in the case of the medical officer of health of a combined district. The scheme now includes 12 areas and a population of about 448,000. In view of the new regulations for dealing with puerperal pyrexia, the county council have agreed to the appointment of an obstetric specialist to attend a limited number of cases, the total fees not to exceed £105 plus travelling expenses, for an experimental period of 12 months ; and have authorised the county medical officer to arrange for the admission to hospital of a limited number of patients at a cost not to exceed £3 3*s.* per week. The arrangements for home nursing, when required, are to be made with the Essex County Nursing Association.

Of 1356 samples of milk, 87 were unsatisfactory ; 28 contained added water, varying from 4 per cent. up to 44 per cent. ; 57 were deficient in fat, the deficiency varying from 5 per cent. to 43 per cent. ; and two samples were unusual in being dyed with annatto. The licences issued by the county council for Grade A milk show an increase year by year. During 1923 eight were issued, during 1924 11, during 1925 27, and during 1926 35. During the year "98 samples were submitted to microscopical examination, when four were found to contain bacilli indistinguishable microscopically from the tubercle bacilli." No further action is mentioned, so presumably the biological test was not carried out. Under the Tuberculosis Order 676 animals were slaughtered. Of these 318 had tuberculosis which was not "advanced" ; 356 had advanced tuberculosis ; and two were found to be not tuberculous. The total compensation paid was £4017 6*s.* 6*d.*, and the receipts from the sale of carcasses were £701 5*s.* 6*d.*

The county council is endeavouring to see that the water-supplies of the county are distributed equitably among the various districts. The rivers are to be gauged, beginning with the Stour, which appears to be the chief practical source of future supplies for the county.

Surrey.

Dr. Joseph Cates records two memorable happenings during 1926. The county sanatorium at Milford was begun, and a scheme to provide treatment for children under school age was approved. The sanatorium will accommodate 300 patients, and the contract price amounts to £166,270. Substantial progress was made by the end of 1926, despite the interruption caused by the general strike, and the building should be completed before September, 1928. In the scheme for the treatment of pre-school children a whole-time dentist is to be appointed and an additional health visitor to act as dental nurse. Arrangements will be made for the services of a part-time ophthalmic surgeon, and for children suffering from enlarged tonsils to be treated in hospital on the terms at present sanctioned by the Education Committee. To begin with, the larger and better equipped school clinics—such as those at Chertsey, Woking, Malden, and Surbiton—will be used for the scheme. Photographs of the Malden clinic are included in the report. The condition of the River Wandle has received considerable attention during the year. A detailed survey from Wandle Park, Croydon, to the London-road bridge at Wallington has been made. Pollution in this stretch is chiefly due to oil from the surface water system at Croydon. The removal of obstructions due to deposits and defective banks has diminished the danger of flooding. Two instances of chemical pollution, both originating in the Carshalton district, were dealt with.

Dr. Cates deals with the recognised relation of chicken-pox to herpes zoster, and suggests that, when it is found necessary to make chicken-pox notifiable, herpes zoster should be also notified. Owing to the apparently increased prevalence of acute poliomyelitis, the county council endeavoured to obtain particulars from the local sanitary authorities. Four of the latter refused to comply with the request, and the matter was referred to the Ministry for a decision. The county council is responsible for maternity and child welfare in a great part of the county, five municipal boroughs and some urban districts being excepted. The area included has a population of 450,670. The superintendent health visitor is

inspector of midwives, but the superintendent of the Surrey Nursing Association inspects the midwives in the employ of her association. The county council provides hospital treatment for children with ophthalmia neonatorum in preference to domiciliary nursing, but little use is made of this arrangement, the cases admitted to hospital during the last four years being 1, 1, 2, and 1 respectively. No cases of impaired vision were reported in 1926, and one in each of the two previous years, the notifications in each of these three years being about 50. For dealing with cases of puerperal pyrexia the county is divided into three areas. Each area has its gynæcologist and available hospital. During the first quarter of the year, under the new scheme, there were two applications from medical practitioners for a second opinion, and five cases were admitted to hospital. More requests for these facilities are expected when the scheme becomes more widely known. The council has no maternity homes of its own, but makes arrangements for the admission of patients to suitable homes, chiefly at Woking, Redhill, Guildford, and Bagshot. These homes are being used more every year, and the accommodation is now hardly sufficient to meet the needs of the county. The council have endeavoured to arrange for a "refresher" course for midwives lasting for a fortnight, but, as no institution in London was prepared to meet this need, an effort is now being made to arrange for such a course at the County Hospital, Guildford. Answers to a questionaire on the subject of overcrowding, addressed to the local authorities in the county, showed that in rather more than one-third of the districts there was some evidence that overcrowding was diminishing.

Warwickshire.

Dr. A. Hamilton Wood points out that of the 356 deaths of infants 176, or 50 per cent., were due to congenital debility, malformation, or premature birth, and he looks forward to antenatal instruction in the future through the obstetrician and the midwife as the means of preventing many of these deaths. At the present time, however, the antenatal work is on a very small scale. There were 6493 births in the county during 1926. The two principal antenatal clinics at the county maternity homes at Warwick and Rugby were attended by 164 expectant mothers, and two small antenatal clinics at Coventry and Stratford-on-Avon were attended by 23 expectant mothers.

The Coventry and Warwickshire Hospital and the Warneford Hospital at Leamington have antenatal clinics for the admission of complicated cases to their maternity wards. It thus appears that up to now only about 200 expectant mothers in the county receive antenatal supervision through these clinics. There were 14 notifications of encephalitis lethargica in the urban districts and 19 in the rural, and 21 deaths were registered from this disease. The Upper Tame Basin Joint Committee have improved the quality of the river water before it reaches the county, but a great deal still remains to be done. The trade waste from paper mills is found to be difficult to deal with. On July 27th a complete survey was made of the Avon and its tributaries. The pollution of the river by Leamington was worse during the summer owing to the pumping being interfered with by the coal shortage. The capacity of the pumps is to be increased and filter beds, capable of dealing with the whole of the town's sewage, are to be laid down. Rugby sewage works are giving improved results. The improvement from the work done at Coventry is not as great as was expected when the works were extended some two years ago, and the area available for bacterial filtration will need to be increased.

The measures taken by the county council to comply with the new Milk Act are to investigate all cases of tuberculous milk reported by outside authorities and to take 50 bulk samples with a view to the detection of tubercle bacilli. Ten notifications of tubercle-infected milk were received from outside authorities, but as the result only three tuberculous cows were found and slaughtered under the Order. Seventy-five per cent. of the births were attended by midwives, who sent for medical help in 990 cases out of 4887. The provision made to comply with the new puerperal pyrexia regulations consists of the admission of cases to the larger hospitals of the county at a charge of £3 3*s.* per week, pathological examinations by the University of Birmingham, and the appointment of obstetric consultants, one at Birmingham and the other at Leamington. By the Housing Act of 1926 the county council is empowered to take steps for the improvement and renovation of labourers' houses, but the district councils may apply to the Ministry for permission to administer the Act. Most of the district councils have so applied, and for the present the county council will leave the administration of the Act to the urban and district councils.

Leicestershire.

Dr. J. A. Fairer reports that Dr. T. Robinson had to resign on Sept. 30th on account of ill-health, after 28 years' service, and that he has been appointed consulting medical officer. Dr. Fairer has to record a widespread outbreak of infantile paralysis during the autumn, which makes "a comprehensive scheme of orthopædic treatment a matter of extreme urgency." The cases numbered 72, 55 being in the rural districts and 17 in the urban. A feature of the distribution of the cases was the relative immunity of the coal-mining districts of the western part of the county. The county council provides 15 beds at a convalescent home at Woodhouse Eaves for county children, of whom 92 were admitted during the year with very satisfactory results. The enormous development of housing schemes has led to new difficulties in sewage disposal. Serious pollution of rivers and streams is unavoidable during this period of reconstruction, and the difficulties, says Dr. Fairer, will have to be faced with foresight and determination. Improvements are being effected in the hygienic conditions of the elementary schools, especially with regard to cloakroom accommodation and the arrangements for drying clothes in wet weather. Six dairy farms were visited owing to outside complaints of tuberculous milk. On four of the farms no animal giving tuberculous milk could be detected, and the unusual suggestion is put forward that producers sending milk by rail do not always have their own churns immediately returned to them, that these churns may be used in the interval by other milk producers, and that the real owner of the churn may be blamed for tuberculous milk which he did not produce.

Northamptonshire.

Dr. L. Meredith Davies took over the duties on April 1st from his predecessor, Dr. Charles E. Paget, the first medical officer of health for the county, whose term of office extended from 1897 to 1926. Dr. Paget's recent death was announced on p. 682 of the last issue of THE LANCET.

Good progress has been made in the coördination of the health services, which, however, will not be complete until all the branches are housed in one building. In the future a single medical officer will supervise the health of the children from prenatal days until they leave school, and a single officer will deal with each family, except for tuberculosis or eye defects. The time saved will enable the schools to be visited every 12 months instead of every 14, and the work should be more efficient. The amalgamation of office staffs is under consideration, and also a scheme by which the same nurse will carry out health visiting and school and tuberculosis work. The county council have installed two mercury-vapour lamps at the Wellingborough dispensary, in order to ensure the treatment of all known cases of lupus in the county. Dr. Davies says the results of light treatment in lupus have exceeded expectations and that improvement is more rapid in the ulcerative varieties. "Dramatic results" are obtained in the case of discharging sinuses in connexion with various tuberculous conditions. The pre-tuberculous group shows distinct

improvement in mental health and brightness, with definite gain of weight. Under the definition "pre-tuberculous" he includes children with a history of exceptional exposure to infection and those who either present stigmata of tubercle or are debilitated, anæmic, or marantic, or have failed to recover completely from measles, whooping-cough, &c. With regard to pulmonary cases, much longer experience will be necessary before expressing an opinion, but good results have been obtained in a few carefully chosen cases. Vitaglass has been substituted for ordinary window glass in the children's wards of the sanatorium. Dr. Davies discusses the relation of tuberculosis to the boot and shoe industry. About 20 per cent. of the occupied workers are engaged in this industry, and the number of new patients at the dispensary, the number of patients admitted to the sanatorium, and the number of deaths of adults from pulmonary tuberculosis in the same industry are all about 25 per cent. of the respective totals. The finishers and the clickers are the workers chiefly attacked by tubercle. In the clicking department the air is stagnant but free from dust. In the finishing department the air is hot from gas jets and generally very dusty. In each case the work is sedentary and light. Outside complaints of tuberculous milk led to veterinary inspections at four farms and the bacteriological examination of 29 samples of milk, but no cows with tuberculous udders were traced. Up to now the county council have made no arrangement for the veterinary inspection of the cattle in the county, but have contented themselves with appointing the existing joint committees for veterinary inspection, which only cover a portion of the county, their agents.

Cumberland.

Dr. F. H. Morison refers to the unenviable notoriety of his county for a high maternal death-rate from childbirth. For its reduction he looks to antenatal work. There is no mention, however, of any antenatal clinics conducted by the county council. The Housing (Rural Workers) Act, 1926, has been considered. Several district councils wished to work the Act. The county council, however, decided that central administration was essential to secure uniformity of practice throughout the county. They have therefore drawn up a scheme, which has been approved by the Ministry, showing the conditions under which financial assistance will be given to the owners of small properties to enable them to effect improvements and renovations. Dr. Morison reports three outbreaks of diphtheria in which immunisation was apparently effective. In the first at Hayton there were 13 cases with four deaths. This outbreak was associated with a carrier, and cases occurred intermittently from August, 1925, until July, 1926. Ultimately all the school staff and children (whose parents gave consent) were Schick-tested and immunised. No fresh cases occurred subsequent to the inoculations, in spite of the fact that the carrier was in attendance at the school. The second outbreak, at Hallbankgate, occurred suddenly in the autumn of 1926. There were 11 cases with three deaths; 140 children were immunised, and no subsequent fresh cases occurred. At Brampton there were 13 cases with one death. About 240 children were immunised, and in this case two of the inoculated children subsequently contracted diphtheria. One of these children had only had one inoculation, and the second three inoculations, a month previous to the attack of diphtheria.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 17TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 126 (last week 146); scarlet fever, 1675; diphtheria, 1022; enteric fever, 104; pneumonia, 454; puerperal fever, 40; puerperal pyrexia, 79; cerebro-spinal fever, 8; acute poliomyelitis, 46; acute polio-encephalitis, 4; encephalitis lethargica, 23; dysentery, 8; ophthalmia neonatorum, 111. No case of cholera, plague, or typhus was notified during the week.

While the cases of poliomyelitis and polio-encephalitis are scattered over 16 counties in England and Wales, there is a high incidence of the infection in the East Riding of Yorkshire, where the numbers reported for the last few weeks (looking backward) are 20, 25, 20, 13, 8. From Kingston-upon-Hull itself 14 cases were reported this week against 21 cases last week. It is stated that the mortality has not been heavy.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 5 (0) from enteric fever, 13 (2) from measles, 6 (0) from scarlet fever, 8 (4) from whooping-cough, 27 (6) from diphtheria, 75 (22) from diarrhœa and enteritis under two years, and 24 (2) from influenza. The figures in parentheses are those for London itself.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. W. L. Hawkins is placed on the retd. list with the rank of Surg.-Capt.

Surg. Comdrs. C. A. G. Phipps and K. D. Bell to *President*, for Royal Victoria Yard, Deptford.

Surg. Lt.-Comdr. F. C. Hunot to be Surg.-Comdr.

The following appointments have been made by the Admiralty: Surg.-Lts. F. W. Gayford to *Foxglove*; T. S. Osborne to *Bruce*; H. J. Scott to *Cricket*; A. S. Burns to *Castor*; and T. F. Barlow to *Keppel*. Surg.-Lts. (D.) F. W. Watt to *Victory*, for R.M. Infirmary, Eastney; and D. L. Simpson to *Victory*, for R.N. Barracks, temp. supy.; and T. Hunt to *Ramillies*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg.-Lt. R. S. Allison to be Surg.-Lt.

ROYAL ARMY MEDICAL CORPS.

R. Reynolds to be Temp. Lt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. F. Harvey, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Capt. (Prov.) A. Badenoch is confirmed in his rank.
Lt. C. P. Oliver to be Capt.
Lt. D. R. Lewis resigns his commn.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. J. Lamberton from the Active List to be Capt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions in the rank of Flying Officer for three years on the Active List: G. T. O'Brien and P. O'Callaghan.

Flying Officer W. D. Guyler is promoted to the rank of Flight Lt. (Dental) on promotion to Capt. in the Army Dental Corps.

INDIAN MEDICAL SERVICE.

Capts. E. C. A. Smith, Kekhasru Sorabji Master, W. J. Webster, and S. R. Prall to be Majs.

Maj. G. Covell has been appointed Supernumerary Officer, Central Research Institute, Kasauli. Lt.-Col. D. H. Rai, professor, King Edward Medical College, has been appointed Civil Surg., Lahore, vice Lt.-Col. J. G. D. Swan. Sardar Sahib Dr. Amdik Singh has been appointed Officiating Civil Surg., Shahpur, vice Dr. Traynor. Maj. A. S. Fry to officiate as Officer Commanding Indian Military Hospital, Peshawar, vice Lt.-Col. G. C. L. Kerans, granted leave. Capt. L. G. Pearson to officiate as 2nd in Command, Indian Military Hospital, Peshawar, vice Maj. A. S. Fry, vacated. Capt. R. Sen to be 2nd in Command, Indian Military Hospital, Sialkot, vice Capt. D. P. Bhargava. Capt. D. Kelly to be in Command, Indian Military Hospital, Bakloh, vice Capt. R. A. Leembruggen, vacated. Maj. R. N. Khosla to be 2nd in Command, Indian Military Hospital, Lahore Cantonment, vice Maj. J. B. Hanafin, vacated. Col. W. D. A. Keys, Indian Military Hospital, Bangalore, to be Senior Brevet Colonel. Maj. J. Scott to be Brevet Lt.-Col. Lt.-Col. J. G. D. Swan, Civil Surg., Lahore, has been granted leave, and Maj. T. L. Bomford, Officiating Civil Surg., Burdwan.

Correspondence.

"Audi alteram partem."

THE BROAD ROAD OF HEALTH.

A REJOINDER.

To the Editor of THE LANCET.

SIR,—The MacAlister lecture, which I had the honour of delivering before the London Clinical Society in July last, has been the subject of a good deal of discussion, both in the correspondence columns of THE LANCET and elsewhere. In addition to the comments which have appeared in the medical and in the lay press, I have received a very large number of letters. The part of the lecture which has given rise to the greatest amount of discussion is that in which I said that the case for wholemeal bread had recently been overstated. I still maintain that this is so. In this letter I wish to draw attention to two considerations of a more general kind, arising out of the wholemeal bread propaganda in so far as medical men have taken part in it.

Before doing so, perhaps, it may not be out of place to refer to some of the criticisms which have been advanced against my view. I do not purpose a specific rejoinder. The full corroboration of my remarks in quick succession by several distinguished professors of physiology, by medical officers of health who had made a special study of the question, by the professor of agriculture at Cambridge University, and then by the chief medical officer of the Ministry of Health, renders this unnecessary. It also gives my contention that academic hall-mark which the President of the New Health Society, whilst generously granting me status in another direction, regretted that I lacked in this one. This overwhelming series of confirmations modified considerably the attitude of the Honorary Secretary of the Society, who, before they appeared, rebuked me severely for making statements so "unworthy" of myself, and afterwards suggested that, in view of the different medical opinions enunciated, the Medical Research Council should give the matter early attention. A most admirable adjustment and one which, were it maintained, would doubtless put the teaching of the Society above reproach.

Of my many other critics I need say little. Most of them have misread my main thesis, no doubt being influenced more by an unfortunate newspaper controversy and consequent detachment of some of my sentences from their context, than by reading the lecture itself. I can only explain the virulence of some of the letters I have received by supposing that I have unwittingly struck a blow at some vested interests. Two gentlemen called me a liar and one of them insistently invites me to debate this point on the platform. But a feeling of slight prejudice makes me doubt if such a discussion would serve any useful purpose. Certain firms have sent me boxes of elegantly packed biscuits and specimens of rather expensive bread, feeling sure (they say) that I did not know of the existence of these things or I should not have said what I did. I have been challenged to live by (white) bread alone, despite the plea that I entered for a mixed diet. The challenger offers to write my epitaph if I died, which I should deserve to do if I subscribed to his childish logic. And an appropriate epitaph would be: "I was well; I wanted to be better; here I lie." Mr. X. has told me how well his pigs thrive on wholemeal. Mr. Y. relates how his canaries wilt when fed on flour. I have not had time to remind the writers that a man is neither a pig nor a canary, so they are probably quite happy. And in any case my withers are unwrung, because Mme. Z., "dancer of originality," cheers me by the news that, though her age was 42 last May, she can perform the usual "lifts and swings," and follow her profession of "exhibition and semi-acrobatic dancer, without the slightest fatigue or distress," much better on white bread than she can on brown . . . .

Had the advocacy of wholemeal bread been confined to a statement of its virtues for particular individuals, or even to a recommendation of its use as an occasional alternative to white bread by those who are able to disregard the economic side of the question, I should never have said what I did. For I readily endorse both of these aspects of the matter. But to state that the substitution of wholemeal for white bread by the whole nation would result in such hygienic benefits as would amply compensate for the extra cost to the worker; to go further and promise that such substitution offered immunity from cancer and other diseases: these were claims which I decided, not without consideration, to challenge. I did so because I knew that both of these claims lack the support of science, whether our knowledge be derived from experiment or from experience.

But significant though this ill-informed effort to establish the claims of a particular bread is, the campaign of which it is a part is more significant still, and more serious in its consequences. Nominally undertaken in the interest of personal hygiene, it is actually inimical to this. Although not the motive of those medical men who support the campaign, a disastrous result of the latter is the creation in the public mind of the idea that health is an extremely difficult thing to secure. The citizen is led to believe, and to fear, that only by a series of close observances, and equally close restrictions, can he hope for physical salvation. So much so that many are saying: "It is high, I cannot attain unto it." The way of health is conceived of as a tightrope, along which we make a slow and trepidating progress. The least bias to this or to that side, not immediately corrected, or corrected too slowly or inaccurately, and we plunge headlong into the abyss. Here await us inflammations and ulcerations and cancer—especially cancer.

This is not my conception of the way of health, nor is it the experience of the ordinary healthy human being. Health is a broad and well-paved road; nature is both an excellent road-maker and an excellent road-mender. Not only does it require very little skill, and but a modicum of good fortune, to keep to it, the wayfaring man must be a fool indeed if he errs therein. Now and again there are bends which call for some care; there are cross roads; there is a goodly sprinkling of fools travelling; and pace carries risks of a special kind. But apart from these things the amount of negotiation needed is very little provided we keep control of the car.

Another idea has been promulgated of late, the idea which is embodied in the phrase "The Secrets of Good Health." This second conception is on all fours with the first and is equally regrettable. "Secrets," forsooth! As though good health were something masonic! Regard the carter driving his team, the sailor hauling on his rope, the smith working at his anvil; his physical fitness, far from being a mode of difficult and unnatural progression, or the result of initiation into a ritual, is the most spontaneous of all acquirements. There is here no "struggling, task'd morality," no "strife divine"; there is "no effort on his brow," he "does not strive," he "does not weep." Yet no health society inquires what bread he eats, if he gets sufficient vitamins, or how frequently waste products leave his body. Why should it? Such curiosity could no more discover the "secret" of health than could the question: "What porridge had John Keats?" lay bare the mystery of a poet's soul.

More than one critic has dubbed me the Mark Tapley of medicine. I prefer the rôle of Mark Tapley to that of Mrs. Gummidge. For I hold that in medicine society has a greater enemy than the man who kills joy, and that is the man who kills confidence.

There is yet another unfortunate aspect of this particular campaign. All pseudo-science is obstructive

to the progress of true science. The spread of irresponsible statements about the causes of cancer, such as the fiction that this disease is due to the eating of some special article of diet, tends to distract the public mind from the only way by which this great problem can ever be solved—namely, by painstaking and concentrated research. H. G. Wells, who has done more for the progress of scientific methods than any other man in his generation, puts this fact more eloquently than I can possibly do. "The disease of cancer," says Sempack in "Meanwhile," "will be banished from life by calm, unhurrying, persistent men and women, working, with every shiver of feeling controlled and suppressed, in hospitals and laboratories." Again, lamenting the paucity of workers in this field, he asks, "Where are the mighty armies of investigators? Nothing as yet but guerrilla bands that wander in the wilderness and happen upon this or that." No greater deterrent to an adequate appreciation of our present ignorance of the causes of cancer could possibly exist than the serving up to the public of private notions under the guise of established facts. And that certain medical men, who have in other fields earned a prestige which enables them to speak with authority, should endorse the fantastic vapourings of untrained laymen, is both pathetic and unfortunate.—I am, Sir, yours faithfully,

Harley-street, W., Sept. 28th, 1927. THOMAS HORDER.

LUMINAL IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—I was much interested in the article by Dr. J. Tylor Fox in your issue of Sept. 17th. In a short paper which I published in your columns on August 5th, 1922 (p. 275), I reported my experience in the days of the early use of this drug. During the past five years I have continued the treatment of epilepsy with this drug in both hospital and private cases, and my experiences had led me to form similar views to those expressed by Dr. Fox.

In the majority of cases improvement has occurred in the first few months of treatment, but, unfortunately, observation of its use over a more prolonged period has not confirmed one's original opinion of its value. In many cases, after a period varying from 6 to 12 months, the frequency of the attacks tend to increase sometimes in an alarming manner, and this is often accompanied by a mental condition which can best be described as "mental cloudiness." When, for such reasons, the decision has been reached that the drug must be withdrawn, a difficult period is encountered, lasting from four to six weeks, even if the drug is withdrawn gradually. The patient is liable to develop a series of attacks which can almost be described as fulminating in character. This state has been more likely to occur in the case of children than in adults.

Accordingly, I have been gradually led to confine the use of luminal in epilepsy to certain selected cases, and to discontinue its use in the greater proportion of patients. The older drugs still remain the best agent in the treatment of epileptic seizures. I should mention that the drug I have used is luminal in suspension, in a bromide mixture, and not luminal-sodium. I am, Sir, yours faithfully,

Liverpool, Sept. 24th, 1927. W. JOHNSON.

"THE THOMAS SPLINT."

To the Editor of THE LANCET.

SIR,—I beg to thank you for the appreciative critique of my book on the "Thomas Splint" which appeared in your issue of August 13th (p. 337), and I shall be grateful if you will allow me a little space to reply to one or two points on which your reviewer and I do not seem to be in agreement. Your reviewer says:—

> In the description of the Thomas splint for the leg the lowest level of the ring is stated to be at the junction of the ring and inner upright. Surely the lowest point of the ring should be at the point where the tuber ischii comes in contact with the ring, so that naturally, with any displacement, this bony point of counter-extension will always tend to slip back and remain in contact with it."

I beg to assert that my statement is correct. In a properly made Thomas the lowest point of the ring is the point where it joins the internal bar, the word "lowest" being used to mean most inferior when the body is in the anatomical position or more simply nearest the foot and farthest from the head. If the point where the ring joins the internal bar be at a higher level than the point where the ring comes in contact with the tuber ischii the ring will press on the side of the perineum and adductor origins on the rami of pubis and ischium. These parts are not suitable for taking counter extension from. I do not use the splint in the Thomas manner in the initial treatment of fracture of the femur because I find the pull required to restore the limb to and retain it at its proper length causes at least some pain and discomfort to the patient from pressure on the tuber ischii, and these disadvantages do not occur when the splint is used in the Hodgen way.

Your reviewer is incorrect when he states that my method is no better than simple extension in a trough, because the essence of my method is not only to extend the leg to the same length as its fellow, but also to restore and maintain the arch of the femur, which is easily done by the pressure from below of the series of flannel bands passing between the side bars and secured by clips, and with the "key bandage" acting as the key stone does in a stone arch. The restoration of the arch of the femur is impossible or very difficult to achieve in any form of trough splint. Further, my 4-in. flannel bands and 4-in. sectional dressings allow free access to wounds, section by section, so that the restored arch is never lost. This is impossible to do in a trough splint. My method is unsuitable in the old and infirm because of the risk of congestion of the lungs from inclining the body so as to use its weight for the extending force. In these cases the probability of having to prop up the patient must be considered, and, therefore, the Thomas splint must be applied strictly in the Thomas manner, and if the patient be unable to stand sufficient pressure on the tuber ischii, it is better for him to put up with a little shortening rather than to lose his life from pulmonary complications.

I am, Sir, yours faithfully,

MEURICE SINCLAIR.

Harley-street, W., Sept. 24th, 1927.

CANCER AND ADRENALIN.

To the Editor of THE LANCET.

SIR,—On my return from abroad Dr. Cramer's letter in your issue on Sept. 3rd was brought to my notice. Dr. Stephens and I used adrenalin for the well-recognised purpose of localising another reagent. It was only incidentally that we noticed regression of tumours in control animals treated with local injections of adrenalin alone. We made no claim to priority.

On looking up Dr. Cramer's reference to his own experiment in 1905 I find that he injected a "toxic" dose of adrenalin into cancerous mice (number not stated) with the idea of causing hæmorrhage into the tumours. Only three mice survived and "in one the tumours had diminished in size by the fifth day. The animal was then killed." So that it does not appear that Dr. Cramer observed a single instance of complete regression. The two drawings of microscopic specimens he published are such as might be obtained from certain areas in many untreated tumours and are to my mind quite unconvincing. The whole reference consists of some 13 lines of print in a paper dealing with the action of radium on tumours and was unknown to me; but even if I had been aware of its existence I do not think I should have felt justified in referring to it since it does not appear germane to the subject under investigation.

Reicher investigated the effect of local injections of adrenalin fully and got results as good as, or better than, those obtained in the controls treated by Dr. Stephens and myself. In his paper in the *Deutsch. Med. Woch.*, 1910, he claims to be the first to have used adrenalin for the cure of tumours, and I have no reason to doubt the validity of his claim. He does not mention Dr. Cramer's name. Engel, in 1912, confirmed and extended Reicher's results. Dr. Stephens and I found that injections of adrenalin at a site remote from the tumour did not effect cure. If Dr. Cramer can obtain cures in this way, which as far as I know he has not yet shown, he may still, if he is anxious to do so, claim some priority, though he might have to dispute this, amongst others, with Opitz, Vorländer and Jung, who have published good results when using adrenalin, along with cholin, trypan blue, and cerium.

Dr. Cramer considers it "obvious" (always a word to use cautiously) that local injections as a means of treatment are of little importance. Here I entirely disagree with him. The essential point made in the paper by Dr. Stephens and myself, and, indeed, the whole trend of my recent work indicate that by appropriate local treatment an active immunity can be induced which is not local but *general*. This point Dr. Cramer appears not to have appreciated fully, for I can hardly imagine that he would underrate the value of any method which, by local treatment, can effect not only the disappearance of the local growth but leaves the animal immune, against subsequent inoculations of the same tumour, in every part of its body.—I am, Sir, yours faithfully,

THOMAS LUMSDEN.

Lister Institute of Preventive Medicine, London S.W., Sept. 23rd, 1927.

BREAST-FEEDING OF TRIPLETS.

To the Editor of THE LANCET.

SIR,—In these days when many medical men and not a few medical officers in charge of welfare clinics lightly advise artificial feeding, it is refreshing to find a mother of triplets nursing her infants.

Five months ago Mrs. W. gave birth to quadruplets, one of which died at the age of 3 days, the other three, Albert, Edward, and Betty, survived and are now healthy infants weighing 13 lb., 12 lb., 12 lb. 8 oz. respectively. There are two other children aged 11 and 7. The family lives in three rooms, rent of which is 11*s.* 6*d.* weekly, and the average wage of the father is £2 12*s.*

The mother is an ordinary working woman of the South London type, not very robust, and somewhat older than her years. The method of feeding the infants is a little unusual. All three are put to the same breast at one feed, and to the other breast at the next feed, but the first comer at one feed becomes the last at the next and vice versa; one infant is therefore always second comer, which may account for its slightly lower weight. Feeds are given at roughly three-hourly intervals.

The mother's diet is not excessive. In fact, she confessed that she would eat more were "her money better." She drinks, however, three pints of milk and a quart of water daily in addition to her ordinary three cups of tea and one cup of cocoa or coffee.

She has found out that she requires adequate rest, and this, with her extra fluid intake, has enabled her to suckle her infants without difficulty.

It is well known that many women are capable of nursing more than one infant, but even so it is a little surprising that this mother has escaped the ministrations of the many who consider that the nursing of one infant is beyond the power of the average mother.

I am, Sir, yours faithfully,

Lee-road, Blackheath, Sept. 26th, 1927. GUY NEELY.

ST. MARY'S HOSPITAL.—The board of management have extended the term of office of Dr. Graham Little, M.P., as physician in charge of the Dermatological Department for a further period of five years as from Oct. 25th, 1927.

RADCLIFFE INFIRMARY, OXFORD.—In connexion with a post-graduate course at this hospital, Dr. J. Gravesen, medical superintendent of Vejlefjord Sanatorium, Denmark, will give an illustrated lecture on the Modern Treatment of Pulmonary Tuberculosis, at 3 P.M. on Friday, Oct. 14th

Obituary.

ADRIAN STOKES, D.S.O., M.D. DUB., M.R.C.P. LOND., F.R.C.S. IREL.

WE have to record the death of Dr. Adrian Stokes, Sir William Dunn Professor of Pathology at Guy's Hospital, which occurred at Lagos on Sept. 19th. Early this year he was asked by the Rockefeller Commission to go to West Africa to investigate the transmission of yellow fever, which he had previously studied on the Gold Coast. His death was due to infection by this disease. The following account of his life and work has been written by one of his colleagues.

It is impossible to estimate the loss which medical science and education have sustained by the death, at the early age of 41, of Prof. Adrian Stokes. Valuable and varied though they were, his published contributions afford no real index of his genius and of his remarkable power of inspiring clear thinking, hard work, and the best kind of scientific enthusiasm in others. Colleagues and students—and his colleagues, young and old, were among his students and always appealing to him for advice—all held him in the highest affection and esteem. He was a most open-hearted, generous, and lovable man. Save only to those whom he judged to be insincere he set no barriers in his life or his laboratory. All others were welcome and sure of his friendship and coöperation. Seldom have the love of scientific truth and a warm humanity been more closely welded in the same personality.

PROF. ADRIAN STOKES.

(Photograph by Elliott and Fry, Ltd.)

The war gave Adrian Stokes his great opportunity. He joined the R.A.M.C. on the declaration of hostilities and went to France on August 11th, 1914. From that day onward he expended himself in every conceivable way in furthering and improving the work of his own branch of the service. No matter what the task nor whether it were really his concern, provided only that it might save or help to save a single life, he would strive to ensure, and generally in person, that it was done. The incidents which helped to make him something of a legend among his friends and associates are too numerous to record, but it will not be forgotten how in September, 1914, he rode 140 miles on a shaky motor-cycle to bring a supply of tetanus antitoxin to where it was sorely needed. When typhoid fever appeared in the Guards' Brigade in those early months it was Stokes who anticipated the whole idea of the mobile laboratory by equipping his motor-cycle and sidecar (his "yoke," as he called it) with an incubator and a sergeant of the R.A.M.C., and going forth to capture (as he successfully did) the "carrier" responsible for the epidemic. He was the first in France to isolate from the blood stream the organism of gas gangrene,

although his account, through some editorial error, was held back from publication for 18 months. Early in 1915 we find him acting as the mainspring and unofficial liaison officer to the mass of bacteriological and hygienic work necessitated by a grave epidemic of typhoid fever among the Belgian refugees in the neighbourhood of Ypres. This epidemic never extended to the troops which crowded all the billets there. In the same year he was occupied with an outbreak of cerebro-spinal fever in the northern British armies, busy with the work of diagnosis, examination of carriers and contacts, and at the same time treating and instructing medical officers in the treatment of the cases with appropriate sera.

We next find him in charge of a mobile laboratory stationed for two years near Poperinghe, attached for messing purposes to No. 10 Casualty Clearing Station, and devoting every moment of his arduous days not merely to his own routine duties, but also to the bigger task of helping and inspiring others. Surgeons, physicians, and administrative staff were constantly in his debt, and yet all his work was done unobtrusively and he never sought and often failed to gain the credit for important innovations due to him. He was, in a sense, the conscience of all the medical units in his zone. Should the word go forth or his own observations suggest that this or that new method of treating wounds or shock should be put in force, it was Stokes, with his friendly, unorthodox methods of approach, who prompted the surgeons and saw, by personal contact, that the work was properly done. When it was found that warm ether anæsthesia lessened shock and saved lives, and the authorities could only allow a ration of one apparatus per C.C.S., he at once improvised, with his own hands, as many outfits as were needed. When a certain C.C.S. was flooded one morning with the victims of a bad phosgene gas attack, and oxygen supplies were short while the old method of administration with a funnel was shown to be futile, it was he who conceived the simple idea of feeding oxygen continuously to the men (four being supplied from one cylinder) through nasal catheters. The method became universal along the front, was far more efficacious than the more elaborate apparatus supplied later, has been extended to civilian practice ever since, and must have saved countless lives. All these and kindred actions were wholly spontaneous and quite outside his official sphere as bacteriologist, and yet he was never behind-hand with his very arduous laboratory tasks. In times of stress he would become anæsthetist or surgeon, but even then would often start his day early with post-mortem examinations, undertaken in the hope that they might provide useful information in relation to the effects of wounds or gas or disease. Sometimes his quick humanity would outbid his zest for scientific accuracy. Although such incidents were few, more than one war widow whose husband was found dead by the wayside on a bitter winter's night, having obtained unauthorised access to the rum jar, draws a pension to-day because a kindly pathologist found evidence of nephritis acquired "in the field" and reported "death from uræmia."

He did, again, much good work on trench nephritis dysentery, and wound infections, but his most brilliant piece of research was in connexion with an epidemic of spirochætal jaundice (spirochætosis icterohæmorrhagica), which appeared in the salient in 1916. He was the first to recognise cases clinically, and then pursued the inquiry with animal experiments and proved the disease to be identical with that first described in 1914, but more fully in March, 1916, by Japanese investigators. He showed that the rats infesting the trenches were the carriers of the spirochæte and with the aid of "spot-maps" helped to discover what parts of the trench system were responsible for the majority of the cases. This disease is clinically and in its morbid anatomy almost identical with yellow fever, if less lethal, and it was undoubtedly Stokes's work in Flanders which led to the invitation to join the Rockefeller Commissions on Yellow Fever dispatched to West Africa soon after the war and again recently. For his war services he was awarded the D.S.O., the O.B.E., and the Belgian Order of the Crown, and was several times mentioned in dispatches. Stokes went to Germany with the Army of Occupation, came through a severe illness there, and devoted his energies particularly to the big problem of venereal infection among the troops.

After demobilisation Stokes returned to his old school at Trinity College, Dublin, where he became Professor of Bacteriology. In 1922 he was asked to enter for the Chair of Pathology—the Sir William Dunn Professorship—then vacant at Guy's Hospital, and was selected from a very strong list of applicants. He quickly established himself in his new surroundings and won the friendship and eager support of his colleagues. For the students pathology was at once endowed with a new popularity and his classes were always crowded. His phraseology, always unorthodox and quaint, added to the attractiveness of his essentially practical lectures and demonstrations. For his friends, senior and junior, 4 o'clock tea in "Stokes's Lab." became quite an institution. However trivial the requests that came to him at his bench he always left what he was doing to interest himself in the problems of others. If he published but little in his later years it was partly because his time was so fully occupied and he conceived teaching to be his first function, partly because he would never publish anything incomplete, and partly because he would insist on the credit for work done in collaboration falling to the collaborator. To students with personal problems, in sickness or in sorrow, he offered, from time to time, not only his open-handed friendship and holiday companionship, but his very roof.

Of the progress of his researches at Lagos nothing official is known as yet, but from certain vivid and cheerful letters to friends it seems reasonable to suppose that things were going well, and that some of his transmission experiments had already given gratifying results. Until further news is received it can only be surmised that he became accidentally infected by one of his own mosquitoes. Death followed within a few days of the first symptoms.

The son of Henry John Stokes, an Indian Civil Servant, and grandson of the famous William Stokes, he carried on wonderfully a great family tradition. He had a brilliant career as a student. Outside his work he was a keen fisherman and a fearless yachtsman, a good cricketer, and a member of the M.C.C. He was bluff and humorous, intolerant of fools, and could be stirred to a white heat of indignation by any base action or hint of injustice. He loved Ireland and was clearly, although he never spoke on the subject, deeply injured by the circumstances and consequences of the rebellion. As has been shown, he was completely unselfish, and no man was ever more loyal to his friends and to his duty.

When, lamenting the early end to his career, we are prompted to exclaim against the waste of so valuable a life. Should we not rather pause in pride and remember that he accomplished more for his fellow-men and for the medical sciences—taking only the period from August, 1914, to his death from yellow fever in September, 1927—than most men can ever hope to accomplish in a long life-time? J. A. R.

Our Dublin correspondent writes: The death of Prof. Stokes has been felt not only as a great loss to medical science, but as a personal grief by many of the profession in Ireland. Although he spent the last five years of his life as a teacher in London, the whole of his previous career was associated with Dublin. Sprung from a family famous in medicine as well as in art and scholarship, Adrian Stokes was the grandson of William Stokes, the most famous of Irish physicians. He received his medical education at Trinity College, Dublin. His zeal for research and his scrupulous accuracy attracted the attention of his teachers, and particularly of the late Alexander Charles O'Sullivan, at that time lecturer in pathology

in Trinity College. Shortly after obtaining his medical degrees he was appointed an assistant in O'Sullivan's laboratory, where he continued to work until the war called him to other duties. In 1919 he returned to Dublin, where his colleagues hoped that he might spend a long life in adding to knowledge by his researches, and stimulating those around him by his spirit. But the period was not a hopeful one in Ireland, and no one was much surprised when, in 1922, Stokes accepted an unsought and unexpected invitation to a wider sphere of activity in London. Though Stokes thus left us we always regarded him as one of ourselves and counted his reputation among the trophies of the Dublin School of Medicine. His death brings to all who knew him well a sense of surprise as well as of personal bereavement. He was so full of vitality that one never thought of losing him by death. Intellectually a giant, in personality he retained many of the characteristics of a child. He had a child-like simplicity, a child-like honesty, and above all a child-like kindness. And he was subject, too, to the same instinctive dislikes as a child and had something of the same brusqueness in expressing them. As a class teacher he was excelled by many lesser men. He had not the faculty for putting himself in the place of the beginner, and he often over-estimated the knowledge and intelligence of his hearers. But in the laboratory it was different. No pains were too much, no help too great for him to give. He was always busy, but no pressure of work prevented his spending himself in the interest of all honest inquiries after knowledge.

Medical News.

MEDICAL DEFENCE UNION.—The annual general meeting was held at Harrogate on Sept. 24th. Sir Herbert Waterhouse, the President, who took the chair, said that the annual report for 1926–27 was a record of continued growth and progress. The Hume-Spry case had been the biggest and the most anxious case with which the Union had been concerned during the year, and had, he thought, cost more than any other action since the Union was founded. Fortunately, the members had been completely vindicated. He must, he said, "protest against the existing judicial system which permits medical practitioners, who have done their duty honestly in the interests of the public and of the patient, to be subjected to a lengthy and costly trial, because the plaintiff is able to produce affidavits from medical men who see him some months or even years after he was certified, testifying—without any inquiry of those in professional attendance on the patient at the time of, or prior to, certification—that he was not insane when certified, and that those who certified acted negligently, and/or in bad faith." Except for such affidavits the Hume-Spry case would never have gone to trial. The verdict of the jury and the remarks of the judge sufficiently indicated the value they attached to such evidence. The fact that evidence of this type was repeatedly given in court made him wonder whether the disciplinary powers of the profession did not require strengthening. The history of the Hume-Spry case was certainly a striking illustration of the benefit of membership of the Union.

In numerous other cases, continued the President, the Union had been able successfully to defend members whose professional work had been called in question, and although in some few cases they had been compelled to effect a settlement out of court by a monetary payment, he was glad to say that no single verdict had been recorded against a member of the Union. The finances were so satisfactory that it had been possible to increase still further the benefits of membership. The Council was now prepared to defend an action brought against a member in consequence of the acts or omissions in any event of a subordinate medical officer or a non-medical subordinate, and of a partner or assistant if he belonged to either of the two English Defence Societies. Also a member could now obtain protection against actions arising out of the acts or omissions of an assistant who was not himself a member of any defence society, by paying an additional annual subscription of 10s. in advance. The reciprocal arrangement with the other society as regards assistants had now been extended to partners. He must again emphasise the absolute necessity for everyone engaged in active practice to belong to the Medical Defence Union. The Union could only defend its own members, and they must be in benefit.

Referring to a circular letter issued last February to every member of the Union on the subject of X ray examinations in cases of injury to bones or joints, the President remarked that it had evidently been very much misunderstood. It had been interpreted by some as implying that a member who had not made an X ray examination in any such case would not be defended. That was not what the letter said, nor what the Council intended. It was a warning to members that in all such cases the member should in his own interests advise an X ray examination, and that when such advice was not followed, the member should for his own protection place the advice given on record by writing a letter to the patient and keeping a copy in case of future trouble. This advice was based on experience of scores of cases, but was constantly ignored, thus depriving the Council of the only evidence which as a rule made a successful defence possible. The President concluded by expressing sincere thanks to Dr. James Neal, the general secretary, and to Mr. Hempson, the solicitor, for valued help and guidance. He was certain that no society had two important officials more reliable and capable.

The report of the Council and the financial statement for the year 1926 were adopted unanimously. Dr. E. C. Greenwood, Dr. H. Robinson, and Mr. W. G. Spencer, the retiring members of Council, were re-elected. The auditor, Mr. Lewis Hardy, F.C.A., was reappointed, and authority was given for the payment of the first-class railway fares (with expenses if detained for the night) of members of the Council attending council meetings from provincial centres.

The President referred to certain objections[1] raised by the Todmorden Medical Society to a circular letter issued by the Council on Feb. 15th, 1927, to members of the Union only, on the subject of X ray examinations, and explained that the Council had invited any members of the Todmorden Medical Society who were also members of the Medical Defence Union, to attend the annual meeting and state their views. No member of the Todmorden Medical Society was present, and after some discussion a resolution approving the circular letter issued by the Council was unanimously passed, members of Council who were present abstaining from voting at the request of the President.

A hearty vote of thanks to the President and Council for their services during the past year was passed with acclamation.

MEDICAL SOCIETY OF LONDON.—The annual general meeting will be held on Monday, Oct. 10th, at 8 P.M., after which Mr. H. W. Carson will give a presidential address on Surgery in the Early Days of the Society. Other forthcoming arrangements include a discussion on the Duodenal Tube, at 8.30 P.M., on Oct. 24th (introduced by Dr. B. B. Vincent Lyon), and a clinical evening at 8 P.M., on Nov. 14th.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—From Oct. 3rd to 15th, from 10 A.M. to 4 P.M. daily, there will be a course at the National Hospital for Diseases of the Heart (entry limited to 20). The Central London Throat, Nose and Ear Hospital holds it usual October course from the 3rd to the 22nd. It consists of (1) a clinical course, occupying most of each day, which may be taken alone if desired, (2) an operative surgery class from 10 to 11.30 A.M. daily, (3) a practical course in peroral endoscopy, and (4) a course in pathology and bacteriology suitable for D.L.O. students. The numbers for the three last courses are limited. On Oct. 4th the London School of Hygiene and Tropical Medicine will start a series of clinical demonstrations, to be given on Tuesdays and Thursdays at 2 P.M. until Oct. 28th. At 5 P.M. on Fridays, from Oct. 7th to 28th (inclusive), a course in Antenatal Diagnosis and Treatment will be given by Prof. Louise McIlroy at the Royal Free Hospital (entry limited to 10). The subjects of other courses are: Diseases of Children at the Paddington Green and Victoria Hospital for Children, from Oct. 17th to 29th; Gynæcology, at the Chelsea Hospital, Oct. 17th to 28th; Electrotherapy, at the Royal Free Hospital, Oct. 12th to Nov. 2nd; and Ophthalmology, at the Royal Eye Hospital, Oct. 24th to Nov. 5th. On Oct. 3rd a two months' course in neurology will begin at the National Hospital, Queen-square. November courses include two late afternoon courses for practitioners, and courses in Diseases of Children, Diseases of the Chest, Neurology, Proctology, Urology, and Venereal Diseases. A series of lectures, entitled Practical Hints on Medicine, Surgery, and the Applied Specialties, is to be given on Mondays, at 5 P.M., in the Lecture Room of the Medical Society, Chandos-street, W. 1, beginning on Oct. 17th. Series of demonstrations will start during the same week. Both lectures and demonstrations will be open to members of the medical profession without fee. Copies of syllabuses are obtainable from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1. They will be sent regularly on publication if desired.

[1] THE LANCET, 1927, i., 1108 and 1153.

ROYAL INSTITUTE OF PUBLIC HEALTH.—It is reported that the Council of the Institute has decided to bestow the Harben Gold Medal for 1928 upon Sir Ronald Ross, F.R.S., director-in-chief of the Ross Institute and Hospital for Tropical Diseases.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.—The Huxley lecture will be delivered by Sir Archibald Garrod, F.R.S., Regius Professor of Medicine in the University of Oxford, on Thursday, Nov. 24th. The subject will be Diathesis.

LIVERPOOL PSYCHOLOGICAL SOCIETY.—Dr. Barton Hall will deliver a presidential address to this society on Dreams and Dreaming, at the University of Liverpool, on Oct. 4th. Details of the society's programme may be had from the secretary at the University.

A SISTER'S EFFORTS FOR WESTMINSTER HOSPITAL.—A sister at Westminster Hospital has by her own efforts collected the sum of £600 for the perpetual endowment of a children's cot in the hospital.

INVALID CHILDREN'S AID SOCIETY.—The new Hospital and Home of Recovery for Heart Cases (Children) at West Wickham, Kent, will be opened on Thursday, Oct. 6th, at 3 P.M., by Lady Lennard.

ST. MARY'S HOSPITALS, MANCHESTER.—During the year 3269 patients were treated by the maternity department—1489 in their homes and 1780 in the wards. The mortality-rate for all admissions is 2·3 per cent.

A HOSPITAL FOR CANVEY ISLAND.—A committee has been formed to raise funds for a hospital for Canvey Island. An excellent piece of land has been offered as a site on the main road near the recreation ground, with a further space at the rear for any future extensions.

SCUNTHORPE WAR MEMORIAL HOSPITAL.—A second gift of £5000 has been received by Scunthorpe War Memorial Hospital from Mr. Stephen Cliff, of Leeds. The foundation-stone of the hospital will be laid on Oct. 13th by Lord Buckland, and the institution when completed will have 112 beds and will have cost over £100,000.

ST. ANDREW'S HOSPITAL, NORTHAMPTON.—A new reception hospital at St. Andrew's Hospital for Mental Diseases will be opened by Viscount Cave, the Lord Chancellor, at 3 P.M. on Friday, Oct. 14th. At the ceremony Sir Frederick Willis, Chairman of the Board of Control, will make an initial statement.

FAMILY ENDOWMENT SOCIETY.—A public conference has been arranged by this society to be held on the evening of Friday, Oct. 14th, and the afternoon and evening of Oct. 15th at the London School of Economics, Houghton-street, W.C. Sir William Beveridge will give an address on the case for Family Allowances; whilst the other speakers will include Mr. R. A. Fisher, D.Sc., Mr. H. N. Brailsford, Principal John Murray, and Mr. J. L. Cohen. Prof. V. H. Mottram will speak on the Physiological Basis of the Minimum Wage. Particulars may be had from the hon. secretary of the society at 24, Tufton-street, London, S.W. 1.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Oct. 4th.—5.30 P.M. (Cases at 4.30 P.M.) ORTHOPÆDICS. Presidential Address: Mr. W. Rowley Bristow: Arthrodesis, to be followed by a discussion. Relevant cases only will be shown.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Paper: Dr. Kenneth J. Franklin: Valves in Veins—an Historical Survey.

LECTURES, ADDRESSES, DEMONSTRATIONS &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 3rd, to SATURDAY, Oct. 8th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. Special post-graduate course in Cardiology, occupying all day from 10 A.M. to 4 P.M.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Special course in Laryngology, Rhinology, and Otology, including Operative Surgery, a practical course in Peroral Endoscopy, and a course in Pathology and Bacteriology suitable for D.L.O. Students. All day.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens. Tues. and Sat., clinical demonstration on Diseases in the Tropics.—NATIONAL HOSPITAL, Queen-square, W.C. Special two months' course in Neurology.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—On Fri., at 5 P.M., demonstration on Antenatal Diagnosis and Treatment. Further information from the Secretary, Mayfair 2236.

WEST LONDON HOSPITAL, POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Oct. 3rd.—11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Donald Armour: Operations. 4.30 P.M., Sir H. Simson: Post-Graduate Education in Obstetrics.

TUESDAY.—10 A.M., Medical Registrar: Ward Demonstration. 2 P.M., Mr. Sinclair: Surgical Out-patients. 3 P.M., Dr. Pritchard: Medical Wards.

WEDNESDAY.—10 A.M., Dr. Owen: Medical Diseases of Children. 2 P.M., Mr. Gibb: Eye Department.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Dr. Ironside: Medical Out-patients. 3 P.M., Mr. Simmonds: Surgical Out-patients.

FRIDAY.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Mr. Addison: Operations. 4.30 P.M., Mr. Vlasto: Mastoiditis (Lecture).

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy and Ward List. 10 A.M., Dr. Owen: Medical Diseases of Children.

Operations, Medical, Surgical, and Special Out-patients, daily 10 A.M. to 5 P.M.; Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 3rd.—2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

There will also be a special demonstration of medical cases on Monday, Oct. 3rd, at 2 P.M. and of X ray cases on Wednesday, Oct. 5th, at 2.30 P.M. by Dr. Whiting and Dr. Shanks respectively.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 4th.—5 P.M., Dr. J. H. Stowers: Introductory.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Anatomy of the Skin.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 4th.—4.15 P.M., Mr. W. H. Hey: The Past Year's Advances in Surgery.

FRIDAY.—Dr. E. M. Brockbank: Dr. John Ferriar (1761–1815); Public Health Affairs.

Appointments.

Queen Charlotte's Maternity Hospital: TREE, J. R., M.R.C.S., L.R.C.P. Lond., Senior Resident Medical Officer; PEIRCE, G. E. G., M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officer; WILLIAMS, J. C., M.R.C.S., L.R.C.P. Lond., District Resident Medical Officer.

Vacancies.

For further information refer to the advertisement columns.

Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.

Belgrave Hospital for Children, Clapham-road, S.W.—H.P., Asst. H.P., and H.S. Each at rate of £100.

Bradford Royal Infirmary.—Two H.S.'s and H.P. Each £150.

Bury Infirmary.—Third H.S. At rate of £150.

Carshalton, Surrey, Queen Mary's Hospital for Children.—Jun. Asst. M.O. £500.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. Out-patient. Reg.

Dumfries, Crichton Royal Mental Hospital.—Asst. Phys. £350.

Dundee Royal Infirmary.—Asst. S.

Durham County Council, &c.—Dist. Tub. M.O., &c. £500.

Exeter, Royal Devon and Exeter Hospital.—H.P. Also Cas. O. At rate of £130 and £100 respectively.

Gloucestershire Royal Infirmary, &c., Gloucester.—Res. Surg. O. and Asst. H.S. At rate of £175 and £120 respectively.

Grosvenor Hospital for Women, Vincent-square, S.W.—Hon. Anæsthetist.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—Cas. M.O., H.P. Also H.S. Each at rate of £100.

Hendon Union, Redhill Hospital, Edgware.—Res. Deputy Med. Supt. £300.

Hospital for Consumption and Dis. of Chest, Brompton, S.W.—H.P. £50 for six months.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Anæsthetist. Also Res. M.O. and H.P. At rate of £150 and £100 respectively, and Med. Reg. £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.
Hospital of St. John and St. Elizabeth, 40, Grove-End-road, N.W. Res. H.S. At rate of £75.
Hove Hospital, Sackville-road.—Res. M.O. £150.
Jersey General Hospital and Poor-Law Infirmary.—Res. M.O. £200.
Leeds, City Sanatorium, Gateforth.—Res. M.O. £400.
Liverpool Royal Children's Hospital, Myrtle-street.—Res. Cas. O. £120.
London Hospital, E.—Asst. P. Also 1st Asst. and Reg. to one of the Med. Firms, and 1st Asst. and Reg. to one of the five Surg. Firms. Each £300.
London Temperance Hospital, Hampstead-road, N.W.—Clin. Asst., Ear, Nose and Throat Dept.
Manchester Maternity and Child Welfare Centres.—Infant Clinic M.O. £600.
Manchester Royal Infirmary.—Jun. Anæsthetist. £125.
Middlesex Hospital Medical School, London, W.—2nd Demonstrator for the Dept. of Physiology.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Hon. S. to Ear, Nose, and Throat Dept.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Out-patient O. £150.
North Middlesex Hospital, Edmonton, N.—Res. M.O. £200.
Norwich, Norfolk and Norwich Hospital.—H.P. and H.S. Each £120.
Oswestry, Shropshire Orthopædic Hospital, &c.—Two H.S.'s. Each £200.
Ovamboland, South-West Africa.—Dist. S. £1000.
Paddington Green Children's Hospital, London, W.—H.P. At rate of £150.
Princess Louise Kensington Hospital for Children, N. Kensington. H.P. and H.S. At the rate of £100 and £75 respectively.
Queen's Hospital for Children, Hackney-road, E.—H.S. At rate of £100.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rotherham Hospital.—H.P. £180.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. At rate of £150. Obstet. and Gynæcological Unit, Sen. Asst. part-time. £350. Second Asst. £500. Third Asst. £270. Also Res. Asst. Pathologist. £150.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Five Registrars. Each £100.
Royal Northern Hospital, Holloway, N.—Med. Reg. £100.
St. Mark's Hospital for Cancer, City-road, E.C.—Radiologist. Also H.S. At rate of £75.
St. Paul's Hospital for Diseases of the Genito-Urinary Organs, &c., Endell-street, Holborn, W.C.—Hon. Clin. Asst.
Seamen's Hospital, Albert Dock, Connaught-road, E.—Ophthalmologist.
Sheffield Royal Hospital.—Hon. Asst. P.
South London Hospital for Women, Clapham Common, S.W.—Clin. Asst. £1 1s. per attendance.
Sudan Government, Wellcome Tropical Research Laboratories, Khartoum.—Asst. Bacteriologist. £E.720.
Tunbridge Wells Eye and Ear Hospital.—H.S. £150.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Med. Reg. and Hon. Surg. Reg. Also Hon. Out-patient Anæsthetist. 10s. 6d. per attendance.
Warwick County Mental Hospital, Hatton.—Asst. M.O. £300.
Warwickshire and Corentry Joint Committee for Tuberculosis.—Asst. Tuberculosis O. £650.
West Sussex County Council and Bognor Urban D.C.—Asst. County and Dist. M.O.H. £700.

Vacant appointments for Certifying Factory Surgeons are announced at Kenninghall (Norfolk) and at Ellon (Aberdeenshire).

Births, Marriages, and Deaths.

BIRTHS.

COOKSEY.—On Sept. 23rd, at a nursing home, Worthing, Sussex, the wife of Wm. O. Cooksey, L.D.S. R.C.S. Eng., of a daughter.

FISCHER.—On Sept. 21st, at King's Langley, the wife of Dr. Reginald Fischer, of a daughter.

MARRIAGES.

LLOYD—SOLOMON.—On Sept. 15th, at Swansea, William Ernest Lloyd, M.D., M.R.C.P., to Irene Olive Neville Solomon.

DEATHS.

CHIPPERFIELD.—On Sept. 23rd, at Epsom, Thomas John Burgoyne Pearse Chipperfield, M.R.C.S., L.R.C.P., in his 72nd year.

COLEMAN.—On Sept. 22nd, at Leicester, Denis Joseph Coleman, M.B., aged 31.

JOULE.—On Sept. 19th, 1927, at Claremont, Rose Hill, Dorking, John Samuel Joule, M.D. Lond., late of Pinner, Middlesex, formerly of Paddington, aged 77 years.

LANKESTER.—On Sept. 19th (suddenly), at Eastbourne, Ralph A. R. Lankester, M.D., of Bradford, Yorks.

O'KELLY.—On Sept. 25th, at The Acland Home, Oxford, Thomas O'Kelly, M.D., late of Chipping Norton, aged 70 years.

STOKES.—On Sept. 19th, at Lagos, West Africa, Prof. Adrian Stokes, M.D., D.S.O., O.B.E., in his 41st year.

WALLACE.—On Sept. 24th, at New Romney, Kent, John Jamieson Wallace, M.D.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

CLEAN MILK.*

BY FREDERICK T. G. HOBDAY, C.M.G., F.R.C.V.S., F.R.S. EDIN.,
PRINCIPAL OF THE ROYAL VETERINARY COLLEGE OF LONDON.

IT seems an anomaly in this twentieth century, when so much is being done in the domain of hygiene, to speak of anything which is sold for human consumption as "clean." The anomaly is all the greater since it only needs complete understanding and determined collaboration between the medical and veterinary professions to ensure that milk shall always be clean and never anything else.

Method, not Equipment.

In going about the country I have found that the public is not only very ignorant of the dangers of drinking contaminated milk but is also very apathetic; whilst the condition of many of our dairies and cowsheds and the way in which milk is obtained from the cow can only be described as absolutely filthy. One does not expect to find cows in palaces, but one does expect that they shall be kept healthy and reasonably clean. The statement has been made over and over again that the cost of producing *clean* milk is prohibitive to the average farmer, but that this is not so is evident from the results obtained in districts where capable organisers and enthusiastic members of agricultural and dairying committees have taken the matter in hand.

In a recent number of the *Veterinary Journal* Mr. W. A. Hoy, of the National Institute for Research in Dairying, gives briefly the following rules to be observed in producing milk: 1. The long hair on and around the udder is to be kept clipped to make cleaning easier and to avoid the accumulation of dirt. 2. Before each milking the udder and its immediate surroundings are washed clean. 3. The milker's hands are washed between the milking of each cow. A clean milking suit is worn and a scrubbed stool is used. 4. The first milk from each quarter is rejected and the milk taken into a sterilised small-topped covered milking pail. 5. The milk is strained and cooled immediately. 6. After milking, all utensils are washed clean and then sterilised by steam. This is a very important factor in influencing the bacteriological count of the milk.

As is pointed out by Mr. Steele Bodger, in the May issue of the same journal, "it is impossible to emphasise too strongly that it is *method* and not *equipment* which is the all-important factor in the production of clean milk. . . . It is the 101 little things which are so important."

All the rules given above are easy to follow and none is impossible even to the poorest aspirant to dairy farming; but the following extract from a letter recently sent to me by a veterinary surgeon in Lincolnshire shows how far they are neglected, and emphasises the necessity for educational propaganda on these lines: "In this part of Lincs. the ordinary dairyman and farmer has no idea of hygiene and cleanliness; 95 per cent. are wet milkers. They begin by milking a little on to their hands (which in the majority of cases are dirty), then milk into the pail; when their hands and fingers become sticky they dip them into the milk. Just imagine a cow with short teats and a milker with dirty hands. I rarely drink cow's milk and prefer goat's milk—and milk the goat myself."

It would be invidious, perhaps, to mention any one district as being in advance of another, but the propaganda and practical pioneer work done by the National Institute for Research in Dairying (University of Reading), under Dr. Stenhouse Williams and his band of scientific workers, certainly does stand out for what it has done amongst the dairy farms of Berkshire. According to Mr. Hoy, about one-sixth of the milk-supply of Reading (which is a town of 100,000 inhabitants) is Grade A (tuberculin tested), and it is interesting to note that no other graded milk, raw or pasteurised, is sold in the town. Sixty per cent. is bought by private consumers, of whom half belong to the working classes, and the remaining 40 per cent. is taken by hospitals and other institutions. The retail price in the summer is 3½*d.* per pint and in the winter 4*d.*, as compared with 3*d.* and 3½*d.* for ordinary milk. What has been done in Berkshire can be done by other counties. Only yesterday, in Somersetshire, I had the opportunity of seeing a dairy herd of 70 cows supplying Grade A (tuberculin tested) milk from a collection of ancient

* Being the substance of an address delivered before a joint meeting of the Guildford Branch of the British Medical Association and the Royal and Southern Counties Branches of the National Veterinary Association.

buildings which had been completely modernised and brought up to date a few years ago when building was dear, at an expenditure of less than £900—the major part of which was spent upon the impervious transformation of the flooring and walls. This expenditure has already repaid its owner several times over.

Tuberculosis.

Lieut.-Colonel F. E. Fremantle has summed up the requirements of the public health in respect of the milk-supply as follows: "The problem then is to provide at the house door a cheap and plentiful supply of clean milk, free from the germs of tuberculosis. It concerns the health both of man and of animals, and the Ministries, therefore, of Health and of Agriculture. At the farm it involves care in the health, management, and breeding of the cattle; attention to buildings, equipment and water-supply, to the milkers and their methods, to proper treatment of the milk and proper supervision throughout. In transit it depends on speed, protection, and coolness. . . . At its destination the chief need is for proper storage of the milk." In that paragraph we have in a nutshell the principles which underlie a supply of clean milk to the general public, and it illustrates admirably the need for collaboration between the medical and veterinary professions. Milk needs attention in its whole passage from the cow to the consumer. In the cow itself there are questions of health and cleanliness. The statement is made again and again that there are practically a million cows suffering from tuberculosis in Great Britain, and although only a comparatively small proportion of these have tuberculosis of the udder, it is admitted that the question of eradication is not only one of cost but one of expediency.

The United States are waging war on tuberculosis on a large scale under what is known as the "accredited herd" and "area eradication" plans. It is estimated that in the States there are already 13 million cattle which are free from tuberculosis, and the districts in which they are kept are so hemmed in with strict regulations and veterinary supervision that it is difficult, if not impossible, to reintroduce amongst them cattle which are not certified as free from this disease. What has been done in America can be done in Great Britain, and when once tuberculosis has been stamped out, our insular position ought to make it comparatively easy to keep our herds free.

That the new Bovine Tuberculosis Order (1925) is not perfect has recently been brought to the notice of the medical and veterinary professions by Dr. William Savage.[1] The Order throws the onus of diagnosing and reporting a suspected case of tuberculosis on the owner, but the owner has not sufficient knowledge to make the diagnosis until his animal has become diseased in an advanced stage, and by that time it has probably infected others. The deadly work has thus been done before the veterinary inspector sees the herd, and the obvious remedy is that cattle should all be periodically and regularly inspected by qualified veterinary experts. As Dr. Savage says, "It should be made a duty under the Order to report all animals *suspected* to belong to one of the designated groups. . . . The local authority should provide veterinary assistance, free of charge, to ascertain if these suspected animals did come under the Order. As a natural corollary any owner found to have an animal in the advanced stage of tuberculosis which he should have reported (and did not) as a suspected animal, would be fined and no compensation paid for slaughter. This would increase his interest in the problem. The benefit of free veterinary assistance for suspected animals would be of great assistance to owners of herds, and only the neglectful, indifferent farmer would be penalised. It would prevent some of the scandals which occur at present of cows being deliberately milked to the bitter end, although clearly in an advanced stage of tuberculosis, and then when no longer of any use as milkers being reported and compensation claimed."

Inspection.

To put the inspection of milk from the cow to the consumer on a satisfactory basis, the inspection board, to be complete, should have a medical officer of health, a veterinary officer of health, and a sanitary inspector. Each would find plenty to do in his own legitimate sphere and neither would overlap the other in the performance of his duties. At the present time in England it is not an exaggeration to say that there are many hundreds of milking sheds in which the inspector appointed by the Ministry of Health, usually a medical man, has never set foot, and it is not far from the truth, too, to say that the official inspector, even if he tries to perform his duties properly, often has no practical knowledge of what he is supposed to inspect. The inspection of the living animal is obviously the job of the veterinarian, and it seems a peculiar anomaly in 1927 still to find an attempt to perform such duties by the medical officer of health or the sanitary inspector.

Milk in Bottles.

Bottling of milk is not always carried out on the most hygienic lines and is apt to give a false sense of security to the public. A few of its disadvantages have lately been enumerated by Dr. E. G. Gibbs-Smith, who goes so far as to say that "the bottle in commonest use is thoroughly unhygienic. The narrowness of the neck of the bottle makes it difficult to clean the inside. The groove round the bottom inside edge, occasioned by the convex shape of the base, is a more serious objection, because it affords a place for the accumulation of congealed milk. But the worst defect is the groove constructed around the inside of the neck for the purpose of holding the disc in place. In this tiny hollow germs and dust inevitably collect. The method of sealing with a disc is bad in itself. The bottles are opened in 99 cases out of 100 by pressing in the disc with the finger and so letting into the milk whatever may have collected on the outside. The amount of dust which must accumulate when these bottles are left on the stairways of flats, at street doors, and in areas is obvious, and in addition, there is a grave risk of contamination by animals, male dogs especially." Dr. Gibbs-Smith mentions the difficulty of cleansing and sterilising these bottles where the cleansing is done by hand, and also gives an instance of what I myself have actually seen—a man refilling a bottle in the street from a can and sealing it with a disc from his pocket. Not long ago THE LANCET[2] reported a case in which the Brighton magistrates fined a milk roundsman for this offence, whilst a further instance was reported to me by a veterinary student who wrote: "It occurred about 10 A.M. one Saturday morning in a district of the North of London and I was an eye-witness. A milkman was standing by the side of the pavement with the usual milk cans on wheels, tap attached and all complete. The boy collected bottles from the houses as he went along, and brought them to the milk barrow, where the man deliberately filled them up again, and the boy put his hand into his greasy coat pocket, pulled out some of the round cardboard discs, and affixed them firmly with his dirty fingers. Replacing the full bottles on the barrow, the man proceeded on his journey and delivered them to his unsuspecting customers. The making of hygienic regulations is one thing, and their carrying out is another." We shall probably live to see carried out Dr. Gibbs-Smith's suggestion that distributors of milk should use some sort of cardboard container which could be used once and then destroyed.

Experience Abroad.

Last year I took a party of veterinarians to Denmark and Sweden with a view to getting first-hand information about the methods in use in those countries. We visited a number of farms, and in many of them machine-milking was the only method adopted. Those who owned the dairy herds spoke of it in the highest terms both from the point of view of cleanliness and economy of labour. In some of the herds the cows were milked three times a day.

Copenhagen, with over 700,000 inhabitants, is mainly supplied by the Copenhagen City Milk Distributing Company, who get their milk from about 3500 farms with an aggregate of about 55,000 cows. Stockholm, with some 450,000 inhabitants, derives most of its milk from a big coöperative farmers' and milk sales organisation, popularly known as the "Milk Central." The principles upon which they are run are very similar. Dairy farmers apply for membership and are required to hold shares in proportion to the average number of cows they milk. Interest is paid on the money invested and there is a fixed rate for the milk, with profit distributed in accordance with the quantities delivered. The organisation in Stockholm came into being in 1915 when there were 1523 members with an average of 22 cows each. In January, 1927, there were 7260 members, with an average of 12 cows each, so it will be seen that it is not all made up of large dairies. The hygienic control of the milk commences at the farms from which it is obtained, as all the cattle are examined once a month by veterinary surgeons who have strict instructions to deal at once with any sick beast and especially to be on the look-out for tuberculosis. The veterinary surgeon has to report upon the general cleanliness of the cows and the cowsheds and also upon the quality of the food given. Samples of milk are regularly sent to the laboratory to be tested in regard to appearance, taste, smell, purity, and fat-content. And after passing through certain cooling and cleansing processes on arrival at the depôt, the milk is put into sterilised bottles, capped, and despatched to the customer. Almost everything is done by machinery and neither the bottles nor milk are touched any more than is necessary by the hands of the milkers.

[1] THE LANCET, 1927, i., 722.

[2] THE LANCET, 1926, ii., 1287, and 1927, i., 204.

The Situation in England.

Although probably it would be correct to say that Denmark did a lot of pioneering, it would not be fair to give the impression that we are not moving in the same direction in Great Britain. Work on similar lines is being done by such companies as the United Dairies Company and others in our large cities. The part played by super-heated steam in sterilisation and its comparatively economical application is now so well understood, owing largely to the propaganda work of our large dairy companies, that the high-pressure boiler, with its steam pipes and sterilising cupboard and appurtenances, is installed as one of the first essentials in starting a successful dairy. The dairies supplying Manchester, Birmingham, Sheffield, and Edinburgh—to mention only a few of the large towns where properly organised inspection by medical and veterinary officials exists—are shining instances of the benefit which has resulted from collaboration over the question of clean milk between the two professions. This collaboration is essential, and the situation is in our hands if we assert our power and practise what we preach. No family would go against the word of its medical adviser, and the veterinary profession is prepared to work wholeheartedly to carry out the essential legal enactments. There could be no better illustration of the necessity for the collaboration of the two branches of medicine—human and veterinary. A great deal can be done to promote the production of clean milk if the practising doctor and the practising veterinarian, by being particular in regard to the milk they and their families drink, set an example to the public, and if they put in a word in season on every possible occasion. We have it in our power during the daily course of our lives to assist enormously by our words and actions the production of a clean supply of what is a necessity to the health of the nation.

DAIRY RESEARCH AND THE FARMER.

To the Editor of THE LANCET.

SIR,—As a farmer I am sometimes asked whether all the talk one hears nowadays about research in dairying is of any real interest to me, and whether I find that the work done at the National Institute for Research in Dairying at Shinfield, near Reading, is of any direct value. The general impression appears to be that this work is of interest only to a few wealthy people who farm for a hobby with a gay disregard of cost, and that well-groomed cows, with nicely washed udders, together with smart-looking milkers in spotless white overalls may look very well at an agricultural show, but can find no place in the routine of an ordinary farm. Most people are aware that, largely owing to the efforts of the staff at Shinfield, it is now possible to buy milk which is remarkably free from bacteria, and which is produced by cows which have passed certain tuberculin tests. But this super-milk is expensive to produce, and commands a high price, so that only a comparatively small number of people can afford to buy it. The greater part of the population is still consuming "ordinary" milk, which is sold with no guarantee as to cleanliness, and it is often asked whether the work of the Institute has any influence upon the production of this class of milk. The reply is a decided "yes."

It is unfortunate that, as a rule, the producer of "ordinary" milk is paid the same price per gallon, whether he makes an effort to keep it really clean or no, as a little encouragement in this direction would go a very long way. Luckily, however, cleanliness has several advantages from the farmer's point of view. Losses through milk turning sour become rare or disappear altogether, udder troubles are reduced, and the cowmen take a much keener interest in their work. Also in these days of over-production it is an increasingly important point that a farmer who has a reputation for producing really clean reliable milk can always find a ready market for it.

The National Institute for Research in Dairying owns a herd of cows, and farmers in the district are able to see for themselves that it is possible to produce really clean milk with little extra trouble and without expensive equipment or elaborate cowsheds. The methods in use have been evolved after some years of experience, and as they have always been subject to the criticism of visiting farmers they are simple and practical as well as efficient. Hence it is not surprising to find that they have been widely adopted in the district. Farmers are always cautious about taking up new ideas recommended by an institution which is not being run for profit, but when once the ideas have been put into practice by a few successful farmers and are reported upon favourably, the others are ready to follow suit. Thus the clean milk movement, which started slowly, has now gathered considerable impetus; more and more farmers are adopting the new ideas, and the general standard of cleanliness is much higher than it was a few years ago. The modern farmer's faith in the scientist is much greater than the general public realises or he himself admits, and the above indicates one of many ways in which the teaching of the National Institute for Research in Dairying is taking immediate effect, to the benefit of the farmer himself and of the general public.

I am, Sir, yours faithfully,

Tilehurst, Berkshire, Sept. 9th. DAIRY FARMER.

A PORTABLE ELECTROCARDIOGRAPH.

THE Portable Electrocardiograph which has been recently placed upon the market by the Victor X Ray Corporation, Ltd., is an interesting instrument in that it incorporates many new features. Whereas in the usual electrocardiographs the action current of the heart is recorded by an extremely sensitive galvanometer, in this the heart current is amplified by a special three-tube valve amplifier, and is recorded by a ruggedly constructed galvanometer of the mirror type. The principle of amplification of low potential currents prior to recording has been used for some years past by experimental physiologists, both in this country and the United States, but, while inherently successful, the practical difficulties have required much patience and care. The present instrument is said to be extremely simple in operation, and requires no special treatment; it is portable though heavy, and wherever it is placed, there it is said to function satisfactorily; the jar and vibration of transport do not affect it. The makers state that the deflection time is 0·001 second or less—an extremely short period; and it is a pity that definite evidence of this feature is not available. There is no separate time marker, the motor controlling the film being held capable of such uniform speed that the time intervals can be measured on an auxiliary scale which is supplied. This, from the point of view of accurate time measurements, is a grave disadvantage. The general advantages that the makers claim beyond those already noted are that no compensating resistance device for the patient's skin resistance is necessary, that it can be used in daylight, the records are free from confusion owing to the absence of vertical and horizontal lines, and that it avoids the troubles associated with a sensitive string galvanometer. It is an instrument which is interesting because of the many new features, but at the moment there is no evidence available that several of the special claims made by the makers are justified, and they remain to be verified by experience. The price is not yet fixed, but is said to be about £400. The address of the makers is 314–322, Regent-street, London, W.1.

THE ROYAL FREE HOSPITAL.

To the Editor of THE LANCET.

SIR,—It is just 50 years since the Royal Free Hospital opened its wards for the clinical instruction of the students of the London School of Medicine for Women. During this period the development of the hospital has led to many changes. In 1877 there were just over 100 beds; now there are 268. These include 68 beds in the unit of obstetrics and gynæcology, and 20 in the children's wards. The Royal Free was the first hospital in England to have a unit of obstetrics and gynæcology, and is, I think, still the only general hospital which provides accommodation for venereal obstetric cases. In 1877 the out-patient department was held in the basement of the hospital; now there is a spacious out-patient hall, with airy, light consulting rooms, each supplied with several small rooms for the examination of patients. The casualty department was formerly a small room at the gate; now there is a good waiting hall with adequate accommodation for the examination and dressing of the patients, a casualty theatre, and four observation beds, two for men and two for women. The hospital now has a cardiograph room, X ray and treatment rooms, an electro-therapeutical and massage department, light treatment, orthopædic and dental departments, and many other special departments. The "Alfred Langton Home" provides a bedroom for each nurse, with large recreation and sitting-rooms, and a dining-room with small tables. The Home is not yet completed owing to lack of funds, and some 50 nurses sleep in houses in Mecklenburgh-square, and a few in the main hospital. It is desired to complete the nurses' home at the earliest possible moment. Nine private wards have been provided in the hospital. These are in constant demand, and the honorary staff greatly desire that they may be doubled or trebled in number. This could be done if the nurses' home was completed. The annual cost of the hospital has increased from £7200 to £72,000, partly due to the increased price of all goods and salaries, and partly to the increased number of beds.

I should be glad if former students who visit London, and others interested in the development of this hospital, will let me know and I will arrange for them to see it. Contributions from any readers of THE LANCET would, at this time of remembrance, be warmly welcomed.

I am, Sir, yours faithfully,

Gray's Inn-road, W.C., Sept. 22nd. MAY THORNE, Hon. Sec.

*** The address of the Royal Free Hospital Centenary Appeal is 24, Mecklenburgh-square, London, W.C.1.—ED. L.